THE IRON AGE

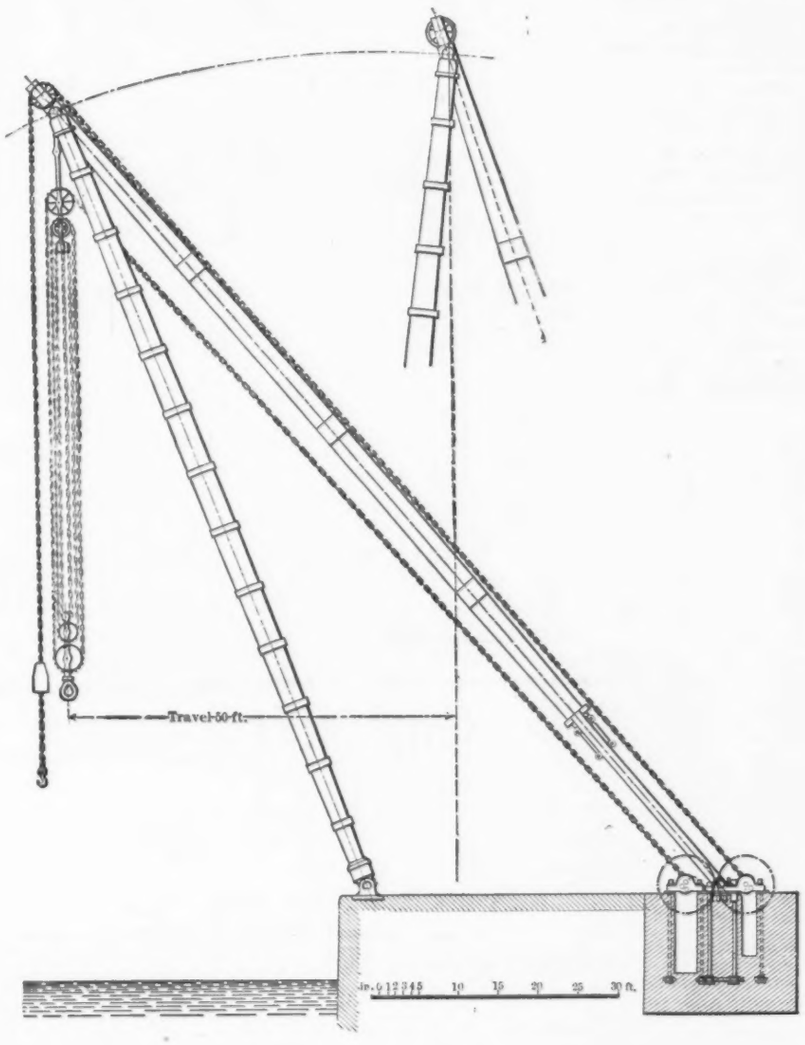
THURSDAY, APRIL 21, 1892.

Eighty-Ton Hydraulic Crane.

We here present drawings, taken from *Engineering* of London, of an 80-ton hydraulic crane erected at Union Dock, West Hartlepool, by George Russell & Co. of Motherwell, and which possesses several new features. The front legs are 105 feet high, and the main hoisting block has a range outward of 50 feet, or from 11 feet 6 inches within, to 38 feet 6 inches without, the vertical. The main block for heavy lifts has six purchase pulley blocks, and there is, besides, a single chain independent of the main purchase, and with separate gearing complete for lighter loads. The horizontal travel is obtained by lengthening or shortening the back leg by means of a main screw of forged steel, 12 inches in diameter, working in gun metal nut and thrust blocks within the leg itself. The screw is driven by cast-steel bevel wheels at the bottom, and is guided by flat guides and rollers on each side to keep the screw fairly in line with the leg while its length is being varied.

The engines are double acting and reversing. There are two pairs, duplicates; they may be used combined for heavy loads, or either pair separately for lighter lifts. The reversing movement is obtained by one eccentric for each cylinder; this eccentric also serves as crank, or disk, and carries the pin for the main connecting rod. The eccentric rod gives motion to a rocking quadrant, the end of the connecting link which communicates motion to the slide valve being movable from one end to the other of this quadrant. Fig. 5 is a section of the hydraulic cylinders, which are 4 inches in diameter, with a stroke of 12 inches. The bore is lined with gun metal. The valve is an ordinary slide valve, but the pressure is relieved from the face by a pull-back piston, A, which enables the valve to be worked with a very slight expenditure of power. At each end of the cylinder is a cushioning piston, B, loaded with a spiral spring to rather more than the working pressure, which is 750 pounds per square inch. This arrangement is to obviate shocks and noise at the end of the stroke due to the incompressibility of the water. When an excess of pressure happens, the piston moves slightly and allows the necessary space for the water, which is sent back into the main cylinder after the engine has completed the stroke and began to return. These engines can be run at 150 revolutions per minute without any noise.

The driver stands where indicated on the ground plan, Fig. 4, at which position all the handles for controlling the various movements are placed. The handles shown on the plan are: C, for the double clutch which places either the single chain or six-power block in gear for lifting; D, for the double clutch giving two speeds of screw in the back leg; E E, for regulating the friction brake, and F F, for lowering. The handles for reversing and regulating the supply of the water pressure are also here, but are not shown, as the connections are attached to the roof of the engine house. The arrangement of wheel gearing and shafts is clear enough not to require further description.



EIGHTY-TON HYDRAULIC CRANE.

This crane has been in constant use for upward of three years, placing on board vessels engines and boilers of the heaviest class. No expense for maintenance has been required, except renewing one or two leathers. It is found that in every respect the working has been most satisfactory. The back leg being fixed to a constant point gives all possible space for rails along the quay. Whereas, if the usual horizontal screw had been used, all the lines of rails would have been blocked when the back leg was shortened. The screw is altogether inside and is protected from dust.

Torpedoes.

"Any case of explosive which by some means or other is provided with the power of aggression either on or below the surface and which is primarily intended for the purposes of offense" is, properly speaking, a torpedo.

An infinite variety of types of torpedoes have been invented since the war of the Rebellion showed the world the damage which could be wrought by the spar torpedo. Much money has been expended and much ingenuity brought into play in developing and perfecting this type of weapon, but it cannot be said that success has yet crowned all these efforts. Some ships have been destroyed by the modern weapons, it is true, notably the Chilian man-of-war Blanco Encalada, but the circumstances attending the operation have not been such as to warrant any conclusions as to the practical values torpedoes will have in the warfare of the future.

All modern torpedoes fall within the category of either controllable or uncontrollable. The controllable class comprises the spar, the towing, the dirigible, the locomotive and the automobile. To the uncontrollable class is assigned the submarine gun, the rocket, the drifting and the automobile fish. A succinct account of each of these types may prove interesting.

The Spar Torpedo.—This weapon gained prominence in our civil war by doing considerable damage. The best known instance of its employment was when Captain Cushing blew up the rebel ship Albemarle. The French Navy kept up the prestige of the spar by effectively using it against the Chinese fleet when France and China were at war. Also in the Turko-Russian fights several successes are accredited to its use

The defect of the spar torpedo is that it has practically no range beyond the length of the spar and, therefore, in these days of machine guns and electric search lights a spar attack against a ship is sure to fail. However, for clearing away booms and like channel obstructions, the spar torpedo will always be found useful; and, too, it has the advantages of cheapness, simplicity and adaptability to any ordinary ship's boat.

The Towing Torpedo.—This torpedo was designed to strike an enemy at a distance from the vessel maneuvering it. It was towed at the end of a long line, and was so shaped and arranged that it diverged from the side of the towing ship. Much was hoped from this torpedo, and its adoption became almost universal, but subsequent trials caused it to fall into disfavor, except as a deterrent against ramming. Finally, however, in the advancement of other means, the towing torpedo was relegated to the past.

The Dirigible Torpedo.—This type may be described as meaning those torpedoes which are controllable only in respect to their lateral direction. Of those of the type which have been invented, the Berdan is probably the most ingenious. This system requires two torpedoes, one towed by the other; the leader is slightly the more powerful and is dirigible, being steered from the ship or the shore by lines attached to the rudder yoke of the leader. When the leader strikes an object the tow rope to the smaller weapon slackens, causing the smaller, owing to its shape, to dive down and come up under the ship's bottom. So far as known there are no dirigible weapons in use nowadays.

The Locomotive Torpedo.—To this type of controllable torpedo belong the Sims-Edison, the Brennan and such others as have their motive power developed by some means external to the weapon itself. The Sims-Edison has been often described. It promises well; in fact, there is little to be desired in the way of accuracy and maneuvering, and recently its speed, hitherto its weakest point, has been considerably augmented.

The Sims-Edison torpedo consists, to describe it in a few words, of a cylindrical hull with conical ends rigidly attached to a copper float. The propulsion is effected by means of a dynamo at the operating station and a motor in the torpedo, the two being in connection by a long insulated wire. By means of relays, wires and magnets, the current through a second wire is made to steer and direct the torpedo. In recent trials, both in the United States and in Europe, the Sims-Edison has given highly satisfactory results.

The Brennan torpedo, of the same type as the Sims-Edison, has been adopted by the English Government. The distinctive feature in the Brennan is the mode of propulsion, which is effected by the rapid unwinding of two steel piano wires from two drums in the interior of the torpedo connected to two propeller shafts. The unwinding is done by a powerful winding engine on shore.

There are other torpedoes of the locomotive type, but they have not yet gained much distinction.

The Automobile Torpedo.—An automobile controllable torpedo carries its motive power within itself. The Lay is the best known of the type. It consists of a circular cross section with pointed ends attached to a float like the Sims-Edison. The motive power is a gas stored in a liquid form under great pressure and conducted from the reservoir through heating and expanding chambers to an engine driving a propeller. A cable connecting the torpedo with the shore is made up of two wires, one for stopping and starting the engine and the other for steering and guiding the torpedo.

Quite similar to the Lay is the Patrick. Both have been often experimented with, but neither has met with governmental sanction.

The Nordenfeldt torpedo of this type is interesting by reason of its being propelled by electrical power obtained from accumulators carried in the body of the torpedo itself.

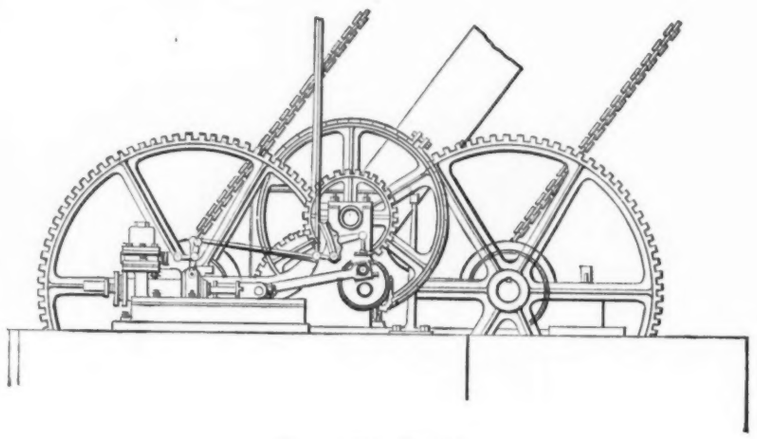


Fig. 2.—Side Elevation.

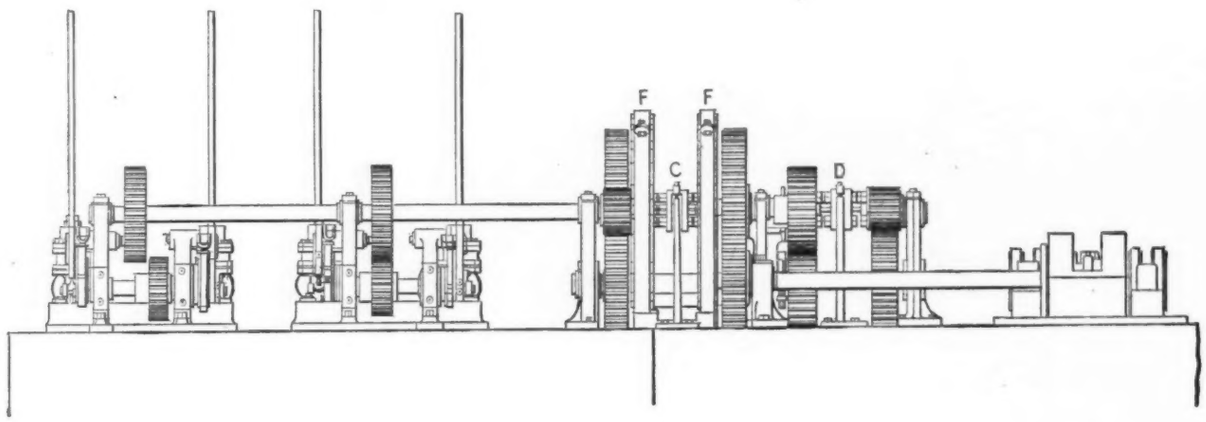


Fig. 3.—Front Elevation.

EIGHTY-TON HYDRAULIC CRANE.

Uncontrollable Torpedoes.—This group includes every torpedo which is entirely beyond the control of the operator after it is once started. It can be easily surmised that the objections to the class are that there is no certainty of the torpedo running straight, and that, therefore, misses and hits are to a considerable extent matters of chance. There are four types of uncontrollable torpedo, each of which may be briefly described as follows:

The Projectile Torpedo.—This is the submarine gun as exemplified in Ericsson's boat, the Destroyer. Fulton, in 1814, succeeded in firing a submarine gun, and though since that time many other inventors have taken up the idea, yet from the reports of the late trials with the Ericsson gun the practical utility of the method seems as far off as ever. One great difficulty to success is that the motion of the boat will disconcert the aim of the torpedo and cause the weapon to go wide of the mark.

The Rocket Torpedo.—In this type the torpedo is projected by the aid of rockets or rocket composition. Like the idea of the submarine torpedo, that of the rocket torpedo is also ancient, and though many experiments have been made and some promising results obtained, the rocket has not achieved success. There are many admirable points in a rocket torpedo, especially the one pertaining to speed. For instance, the Weeks torpedo, at one time strongly advocated by high American naval officers, has made a speed of some 45 miles per hour over part of its run. The defect in the weapon is the absence of reliability in direction, speed, range, and action of motive power.

The Drifting Torpedo—This type includes those torpedoes which are launched in a current and allowed to float down against the object of attack by the action of the tide. Their use in modern warfare has long been discontinued, since any obstruction would readily stop them in their course. They might prove useful, however, if arranged to float below the surface. In this way a hotly pursued ship might drop one overboard which the pursuer might run up against and be destroyed. Drifting torpedoes are easily improvised, and so far as the record shows no special invention of the kind has been made.

To this automobile class of uncontrollable torpedo belong those weapons in which the power of movement is contained within the instrument itself. The two torpedoes representative of this fish type are the celebrated Whitehead and the Howell. Both have been so often described that but a few words are needed to explain them here. In both the speed is maintained by the action of screw propellers, but in the former this action is imparted by an engine worked by compressed air carried in a tank in the torpedo, while in the Howell the screws are actuated by a heavy fly wheel without the interposition of an engine. This fly wheel is spun up just before launching by a small electrical machine, and by its gyroscopic motion not only propels the screws but keeps the torpedo in position while running.

The Whitehead and the Howell are now under exhaustive trial in the United States, with the object of deciding which of the two shall be finally accepted as the torpedo with which to arm our torpedo boats and ships. The Whitehead torpedo has already been adopted by England, France, Germany, Italy, Russia and every other nation of the world, ourselves alone excepted. Therefore all these foreign powers are watching eagerly for the outcome of the tests to which these two leading submarine weapons are to be put.

The Whitehead torpedo is manufactured in this country by the E. W. Bliss Company of Brooklyn, who have the contract for the production of 100 18-inch weapons of the most approved type. The Howell is manufactured by the Hotchkiss Ordnance Company at Providence, R. I.

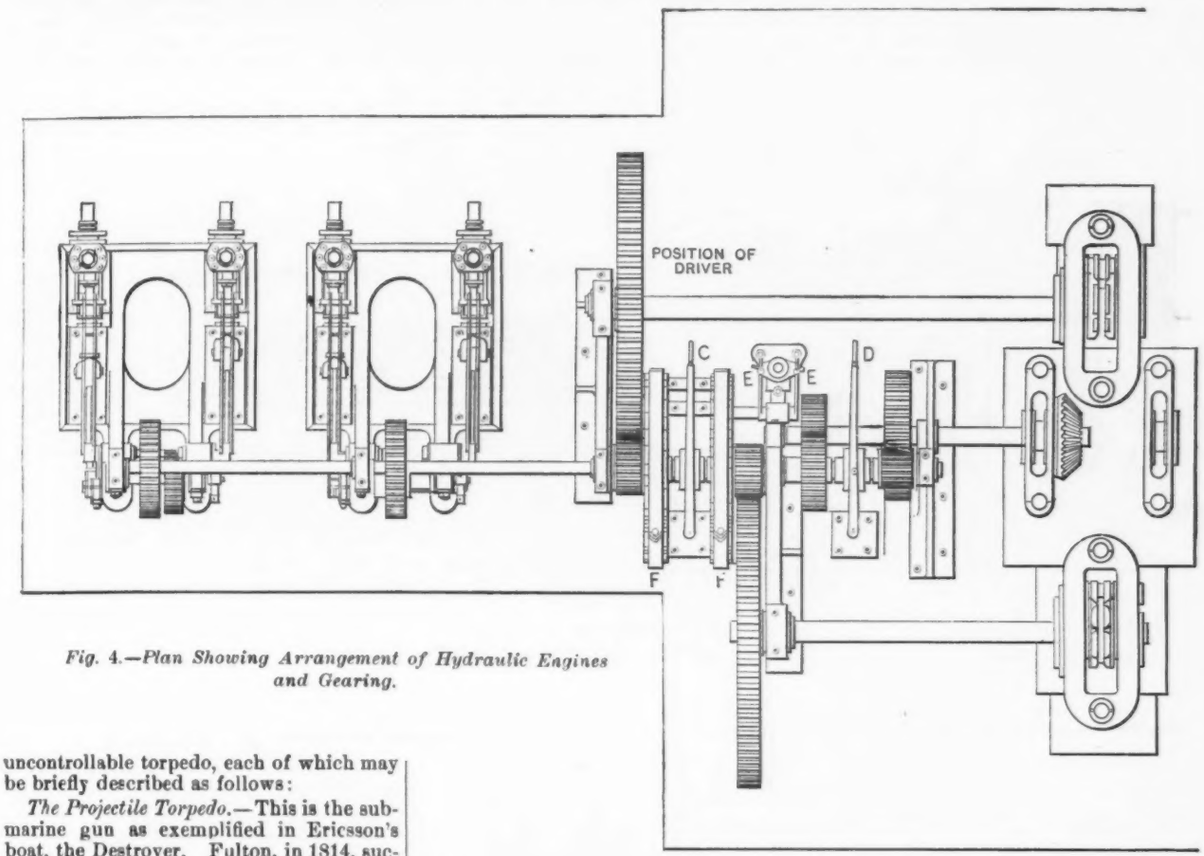


Fig. 4.—Plan Showing Arrangement of Hydraulic Engines and Gearing.

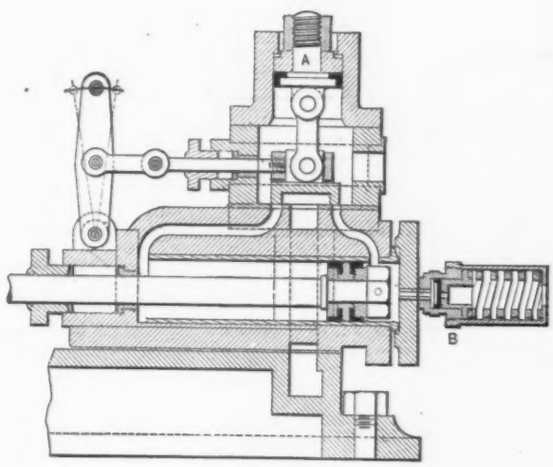


Fig. 5.—Section of Hydraulic Cylinders.

EIGHTY-TON HYDRAULIC CRANE.

An Improved Fuel Gas System.*

The System of the Chicago Heat Storage Company.

In the following description reference will be made to the accompanying cuts, in which the lettters in different figures refer to the same parts. In Fig. 4 the twin generator is shown in vertical longitudinal half-section and half-front elevation will apply to the former as embodying the latest improvements. The principal dimensions shown in the drawings are calculated as the least from which the full possible economy can be obtained. Where more capacity is needed than can be provided with the single generator the twin form is used, and beyond that it becomes merely a matter of duplication to afford any desired capacity. As will be seen, the generator embodies throughout the most approved principles of modern furnace construction, and is well provided with the means of insuring durability, by resisting the enormous strains from expansion and contraction, due to so large a range of changes in temperature. These, however, need not be considered in detail, having no bearing on the principles involved in the operation of the system. The outside dimensions of the brick chambers are 20 feet 8 inches long by 11 feet 2 inches wide, with a hight from floor line of 12 feet. Internally, the chambers are each 8 feet 6 inches by 6 feet 3 inches by 10 feet 3 inches from top of grate to crown of roof arch. The outside walls on three sides of each chamber are formed with the air spaces *o*, Figs. 4 and 5, the outer course of brick being securely bonded to the inner and heavier wall, forming the fire-brick lining. This air space communicates with the atmosphere by the opening *i*. The openings *d'* of each chamber communicate by the flue *d*, common to both, with the boiler furnace. The two charging hoppers *q q* are of the ordinary construction, and are furnished with the usual bell valves. The grates are of novel form, the object being to expose a large amount of surface of the fuel bed to the action of the air and steam. The sections *m m* are fixed, and the inclined position allows the fuel to slide down as that below is consumed. The central lower section *n* is placed horizontally on its bearers, leaving a space of 4 or 5 inches between its upper surface and the lower edges of the inclined sections. As shown in transverse section, Fig. 5, the construction admits of sliding sections of this grate toward either front or back, and by means of the doors *p p* ample provision is made for cleaning the fires. Communication is made between the ash pit *t* and bottom of air spaces *o* by means of two cast-iron return bends, made of two quarter turns *j*, Fig.

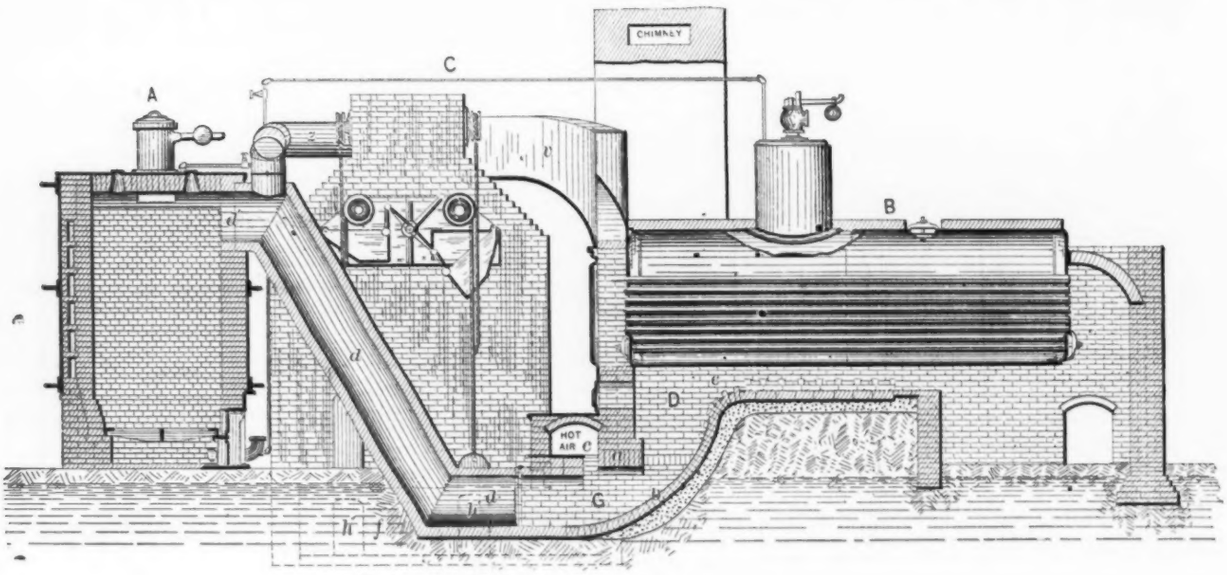


Fig. 1.—Section of Generator and Boiler.

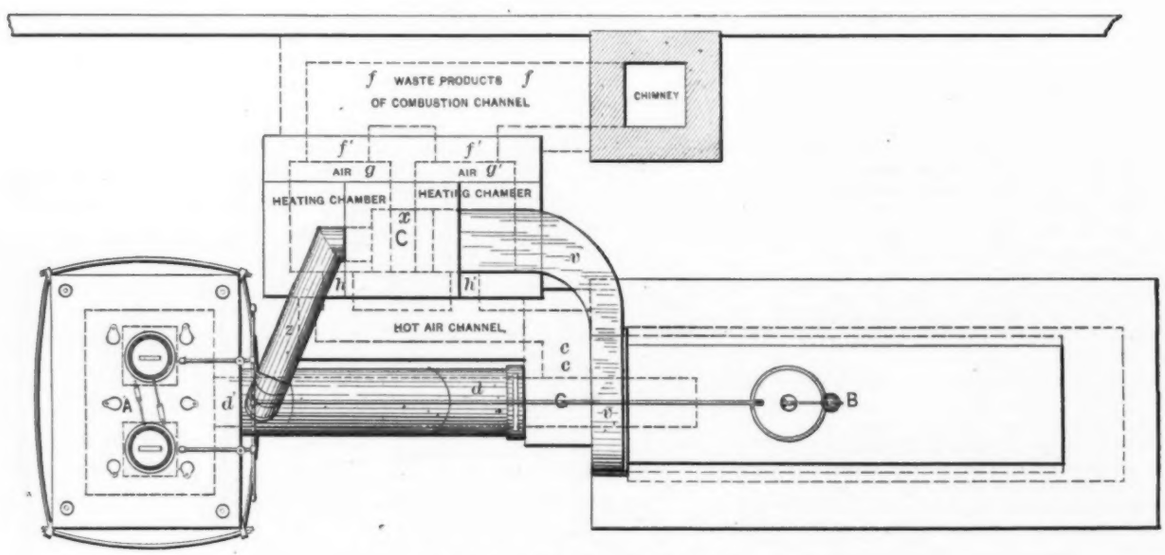


Fig. 3.—Plan of Generator and Boiler.

THE STEAM PRODUCING SYSTEM OF THE CHICAGO HEAT STORAGE COMPANY.

* The publication of this article was begun on August 20, 1891, and a second installment appeared on September 17, 1891, but the concluding part was delayed until now on account of application for foreign patents, which was a complication not foreseen when the publication was first begun.

4, connected by an expansion joint. In the lower bend is a boss, tapped for the reception of a steam pipe, *k*, having on its inner end a nozzle, which is held in central position by a spider. This nozzle is considerably larger than the diameter of the pipe, and is provided with a conical piece *f'* for adjusting the area of opening, and also to give direction to the current of steam parallel with the angular face, thereby spreading the volume of inflowing steam into the form of a hollow cone, and completely filling the circular cross section of the opening. The horizontal steam pipe *s* leading from boiler communicates by its vertical branch *s'* with the pipes *k*, and by the branches *s''*, Fig. 5, with the upper part of the gas chamber in the interior of the generator, entering vertically at top and pointing downward.

The operation of the generator may be described as follows: After the fire is lighted the fuel is supplied by means of the hoppers, in accurately weighed charges of 200 pounds, until a bed of not less than 4 feet thickness is obtained. Steam having been admitted to the pipe *k*, in the air supply pipe *j* a strong current is induced, causing the air to enter the inlet *j* to the air spaces *o*, when it becomes heated by the radiated heat from the generator lining, and thereby not only effects a considerable lessening of the loss from external radiation, but also supplies the air in better condition for combustion. Passing with the steam into the ash pit in a thoroughly mixed condition, it enters the grate uniformly at all points, and the air supply being adjusted to maintain a constant degree of incandescence, the continuous decomposition of the maximum amount of steam is effected. The mechanical effect of this method of admission is two-fold. The film of ash enveloping the surface of the coal is disintegrated and displaced, and the formation of injurious clinker from coals having a readily fusible ash is prevented. This is given as the reason for the small amount of labor necessary in keeping the fire in order, as with lump coal the cleaning is required only once in two days and with slack coal about once a day. As soon as the fuel bed has reached a proper degree of incandescence throughout steam is admitted through the pipes *s''* into the gas chamber above the fuel, and herein lies the essential feature of the invention. By reason of the cooling action of the steam, the too rapid distillation of the volatile hydrocarbons is prevented. As the mechanical effect of the steam jets produces a very thorough agitation of the entire volume of mixed gases, which brings the particles of water into intimate contact with those of the carbon vapors, and the temperature being sufficient for the purpose, their chemical combination is effected, and the result, as shown by the analysis, is the conversion of the tar-producing elements into carbonic oxide and the most valuable of all heat-producing resultants of distillation, marsh gas and free hydrogen; and the steam into carbonic oxide and hydroden. The value of this result has already been referred to in detail. As the pressure in the generator is always maintained by the steam at above that of the atmosphere, there is no danger of the admission of air from leakage, the effect of which would be a wasteful combustion of the perfected gases, a source of much annoyance and considerable (although generally unappreciated) loss in ordinary producer practice.

A waste heat utilizer C, Figs. 1, 2 and 3, while not an essential feature of the system, affords a valuable addition to its economic value, which has been referred to in detail in the remarks on performance.

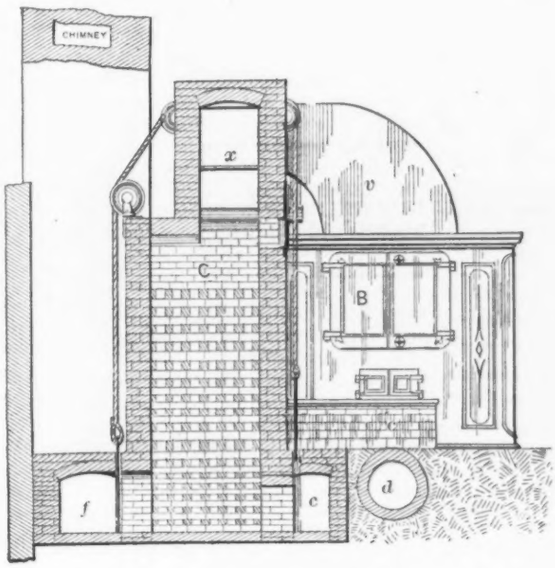


Fig. 2.—Side Elevation.

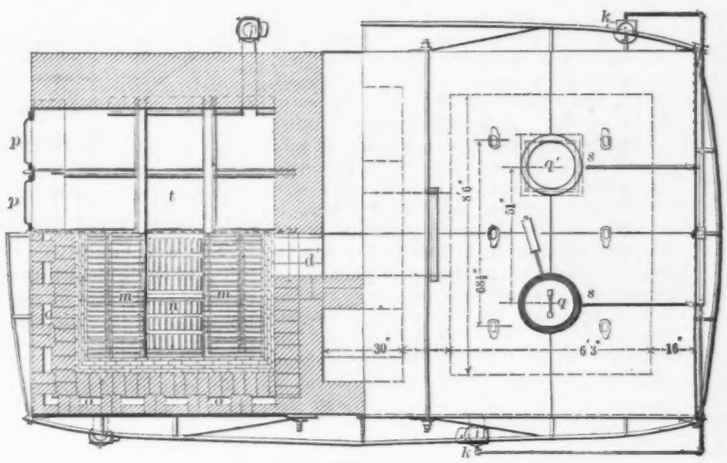


Fig. 6.—Plan of Generator, and Two Half Sections.

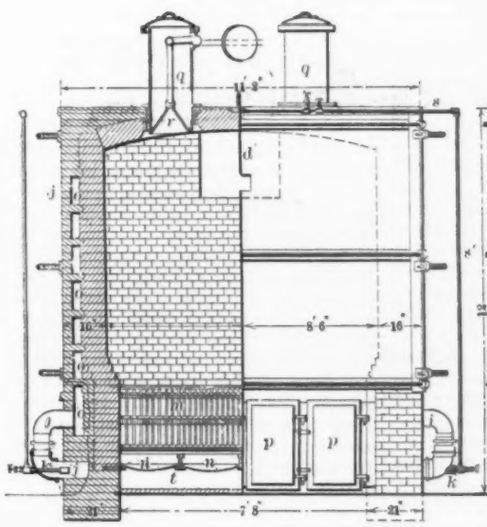


Fig. 4.—Longitudinal Section and Front Elevation.

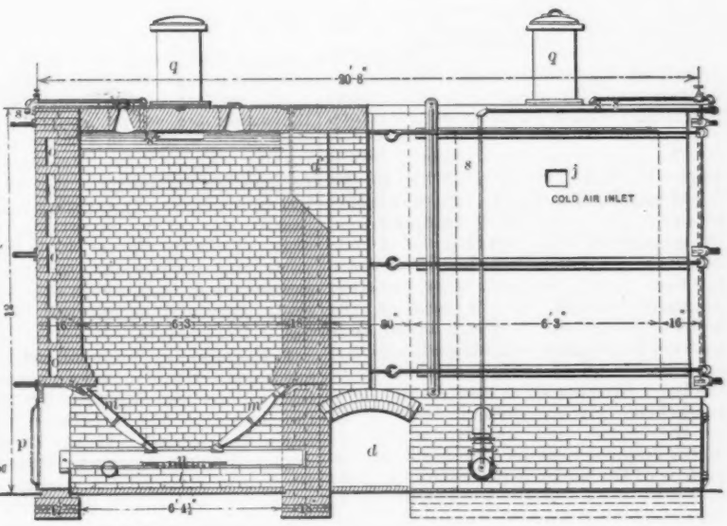


Fig. 5.—Transverse Section and Side Elevation.

TWIN GENERATORS, CHICAGO HEAT STORAGE COMPANY.

It is in reality a pair of regenerators, through which the products of combustion are made to pass in their course to the chimney. By means of a novel and effective arrangement of levers and connections the several valves required in operating are actuated from a master shaft, having a lever which is always placed in extreme position either to right or left. As the apparatus is never exposed to any high temperatures (about 390° to 400° being the maximum) it is unnecessary to use fire brick in its construction. A chamber of rectangular horizontal section, somewhat smaller than the generator, is divided by a transverse wall into two separate compartments, g and g', which are filled with checker work (of red brick) in the manner of an ordinary regenerator The boiler breeching v connects directly with the top of the chamber at x, and the hot gases from the furnace are made to pass alternately, by means of the necessary ducts and valves, downward through the checker brick work, and by the conduit f into base of smoke stack. At the same time the other compartment, having been previously subjected to the heat of the gases, is receiving a supply of cold air at the valve seen in the upper portion of Fig. 1, which is caused by the draft to pass downward through the hot checker work, through its valves and ducts, to the boiler furnace to supply the gas with the necessary volume for combustion. So soon as the temperature of the checker work has fallen a few degrees, the handle operating the master shaft for actuating the reversing valves is moved to the opposite position, and the operation reversed—*i. e.*, the hot gases pass to the stack through the chamber by which the air supply was previously passing to the furnace, and the latter function is performed by the one from which they had been shut off. The reversing ordinarily requires to be at intervals of about three times per hour, but from the complete and efficient mechanism employed no time is consumed, the operation being practically instantaneous. But one of these economizers is necessary with any number of generators.

The boiler furnace B, Figs. 1, 2 and 3, is also of peculiar construction. Gas is admitted from the generator by the gas flue d into the chamber G, where it is met by the supply of heated air admitted from the economizer at the opening c of the air-duct, and ignition effected. By continuing their passage through the contracted, peculiarly shaped opening between the walls at a and b the partially mixed gases are very thoroughly commingled, and in a condition to afford perfect combustion in the large chamber D as soon as the latter is reached. By the peculiar curve given to the hearth and its serrated surface direct impingement of the flame on the surface of the boiler is prevented; and the velocity of the current so retarded as to give ample time for the absorbtion of heat from the products of combustion by the contents of the boiler. Owing to the accurate possible regulation of the air supply and its thorough and intimate mixture with the gas, a practically perfect combustion is not only attainable, but easily so, without requiring any high degree of skill in the fireman. When operated at an economical degree or rate of combustion the flame is carried only so far back in the furnace as will give a temperature to the hot gases which, after the absorption of heat by their passage forward through the tubes, will be reduced to about 380° or 390° at the entrance to flue. Of this amount of heat one-half is recovered by the economizer, and the final temperature at entering the stack is reduced to about 190°. As the initial temperature of the combustion is about 2100° F., we have $\frac{190}{2100} = 9$ per cent. as the total loss from this source.

As a steam plant up to 100 horse-power by the ordinary system requires the services of but one man, of course the cost for labor will be the same as where the new system is used, but for larger plants one man can readily take care of generators, economizers and boilers up to 400 horse power, provided the coal supply is reasonably easy of access.

The physical structure of the coal—*i.e.*, whether lump or slack—while a very important fact as regards cost, has no effect on the performance of the generator, provided only the per cent. of ash is the same, it being purely a question of the respective net percentages of combustible elements in the different commercial grades.

As a number of extensive manufacturing and other establishments are about adopting the new system, some highly interesting data as to performance on a large scale may be looked for.

Captain Coe's Address to the Forge Masters.

At the regular semi-annual meeting of the United Forge Masters' Association, which is composed of the larger steam forges in the United States, its president, Captain L. M. Coe of the Cleveland City Forge and Iron Company, delivered the following address:

To men of mature years time flies on rapid wings. It seems but yesterday since last we met, but six months have rolled away, and their history has been added to the experience of the past. I realize in my own person the swiftness with which one year follows another, and am convinced that in the order of nature it will be but a brief period before the active labors of my life must draw to a close.

It is a consoling truth that the life of no individual, however eminent, is essential to the welfare of mankind. One man or thousands are swept away, but the gap they made is filled in a moment, and the rushing tide of humanity pours on with undiminished numbers. We all come at last to realize the humiliating fact that we cannot stay for a moment the march of time or control for a single instant the power that directs our destinies. All we can do is to discharge with absolute fidelity every duty and accept the future with hopeful composure.

I congratulate you, gentlemen, that we meet again with our ranks unbroken, that the year has been of general prosperity and the objects of our association have been fairly maintained. At the outset of our organization we recognized that in union there was strength; in wisdom of many, power; in agreement, prosperity; in mutual support, security and success. In my judgment we thought correctly, and time has only served to convince me that the aims and objects of the association are prudent, useful and beneficial in character.

It is true the law of supply and demand is as old as the creation; no one on our part can force the product of our labor upon a market unless there is specific demand for their use. All one manufacturer can do to obtain advantage over another in supplying this demand and to secure more than his natural proportion of the market is to enter into sharp competition to secure business, cut prices, undersell his competitor, or furnish an inferior article to take the place of a superior one. To avoid such evils this society was founded. As a rule, trade is maintained by competition. The law of the buyer is to buy where he can buy the cheapest; hence the earnest struggle to secure trade, and the keen efforts of sharp intellects to undersell their rivals; but the result is often found that both buyer and seller have overreached themselves, and neither has gained an advantage.

This society is composed of men engaged in the same occupation. Each firm represented desires to turn out work of the highest order, made with care, sold upon honor and at such prices as enable the manufacturer not only to compete fairly with all his brother manufacturers in the excellence of his products, but at the same time be protected against all efforts to undersell him or produce an inferior article in the market to his disadvantage.

After a careful review of our history it appears to me that our association has achieved a great success. It is certainly a combination of wealth, influence, talents and public spirit. It is probable that here or there some member may have felt that if at liberty to cut prices and enter the market as a free lance he could secure more work and possibly more profit; but I insist that the general good of all the members, the increased prosperity of all the manufacturers, the more reliable methods of business and security against losses lies in a general union of all our members with one common aim, one common object; standing shoulder to shoulder in fraternal agreement, refusing all competition that shall for a moment tempt the production of an inferior article.

So far the work we have produced is the pride of the country and a lasting credit to ourselves. We asked no favors of and can bid defiance to the foreign competitors. The interests of the public are carefully guarded, and during the last year the work we have accomplished has attracted national interest and national approval. But, gentlemen, I have already extended my remarks beyond my intentions. In this organization I take an honest pride; it has become a power for good in the land. I believe in its continuing and in its binding obligations upon its members, but I would have no unwilling or dissatisfied associates. There can be no healthy growth of the body if any of its members are crippled or diseased.

It is difficult in human administration to find any system that works with absolute equality or perfection; but let me urge you, in closing, that from my point of view the destruction of the objects of this association and a return to the old order of individual personal struggles, rivalries, jealousies and heart burnings, cut prices and foolish competition—all evils of such magnitude, I cannot think of them without regret. From the day I came among you I have never faltered in my fidelity to the aims of this association. Whatever may be its future or the result of your present deliberations, the past has been to me a source of patriotic pride and personal satisfaction. I have tried to be your faithful servant and co-worker, and in so doing I have fought a good fight, I have kept the faith.

Charges on Western Freight.

Boston merchants are apprehensive that a recent decision of the Interstate Commerce Commission establishing a system of freight charges on the basis of distances will endanger their Western trade. The Boston *Herald* says: The decision reached will, if complied with, practically compel the steam railroad companies to charge for eastward bound freight no higher prices between the West and Boston than the distance passed over would justify when compared with the rates for similar service granted in the case of New York City. Some of the members of the Boston Chamber of Commerce think that a decided victory has been gained for our city, and undoubtedly this is the case, if the range of view is confined to strictly one side of the

matter. But, if a pro rata rate is decreed for eastward bound freight, it can in justice be argued that it should be exacted for westward bound freight,

Hitherto the charges in both cases have been arbitrary. Freight or merchandise intended for transshipment to Europe has been sent to Boston at no higher price than if intended for transshipment at New York, while westward bound local freights have paid the same rates, without regard to whether shipments have been made from Boston or New York City. But now that it is proposed to establish a system of charges upon the basis of distance—that is, a scientific system of rates—we are likely to be compelled to pay this same rate whether the merchandise is shipped East or West, or whether it is intended for local or foreign consumption.

Suppose the railroad companies were to accept as conclusive this judgment of the Interstate Commerce Commission and were to impose uniform rates for freight in the manner proposed upon eastward and westward local freights and on freights intended for transshipment. The result would be the loss of a very large part of our steamship trade with Europe, for it would then be more profitable for the steamship companies to send their steamers to New York to load. If cargoes of Western produce were then loaded in New York, it would obviously be cheaper to send the steamers there on their outward voyages, so that Boston merchants would be compelled to have their importations come to them via New York City, with the additional costs and inconveniences which such a change would entail. We do not say that this result will follow, but it is well to point out to those who have pushed this matter forward that this is by no means an impossible or improbable outcome.

Pig Iron Production vs. Capacity.

The Production of Pig Iron in 1891 Compared With the Capacity of the Blast Furnaces in 1892.

The wonderful growth which has taken place in the productive capacity of the blast furnaces of the United States during the past few years is almost beyond belief. From the new edition of the "Directory to the Iron and Steel Works of the United States" and from recent official statistics of the American Iron and Steel Association we have compiled the following tables, giving the production of pig iron by the different States of the Union in 1891, the number of blast furnaces in the country in January, 1892, the capacity of these furnaces at that time, and the excess of the capacity of the furnaces over the quantity of pig iron produced in 1891. For the sake of convenience we have arranged the States according to the popular geographical divisions. The capacity of the furnaces represents the production of the furnaces if they were all blowing at the same time and each furnace operated under the most favorable circumstances—conditions which in the nature of things are not practicable. It should also be borne in mind that a number of the furnaces described in the Directory have not been in operation for several years, many of them being badly located so far as ore, fuel, railroad connections, &c., are concerned; this being especially true of a number of charcoal furnaces in New York, Pennsylvania, Virginia and several other States. These facts show that the actual production of the furnaces is somewhat nearer their practical capacity than the figures in the table indicate, but the difference between the theoretical and practical capacities is not so great as to invalidate the conclusions which may be drawn from the tables. The first of the tables referred to is as follows:

Production and Capacity of all Blast Furnaces, by States and Districts.

States and Divisions.	Number of completed furnaces, January, 1892.	Production of all kinds of pig iron in 1891. Net tons.	Annual capacity of completed furnaces, January, 1892. Net tons.	Excess of capacity over production in 1891. Net tons.
New England States:				
Maine	1	.....	6,000	6,000
Mass.	4	10,069	19,500	9,431
Connecticut	9	24,428	41,500	17,072
Totals	14	34,497	67,000	32,503
Middle States:				
New York	37	352,925	753,500	400,575
New Jersey	15	103,549	274,345	170,756
Penna.	219	4,426,673	6,662,748	2,236,075
Totals	271	4,883,187	7,690,593	2,807,406
Southern States:				
Maryland	13	138,206	463,200	324,994
Virginia	33	330,727	677,000	346,273
W. Virginia	4	96,637	184,000	87,363
Kentucky	10	50,225	280,000	229,775
Tennessee	19	326,747	448,000	121,253
N. Carolina	1	3,603	6,000	2,397
Georgia	6	55,841	107,000	51,159
Alabama	53	891,154	1,618,000	726,846
Texas	4	20,902	58,000	37,098
Totals	143	1,914,042	3,841,200	1,927,158
Western and Pacific States:				
Ohio	72	1,159,215	2,176,500	1,017,285
Indiana	2	8,657	30,000	21,343
Illinois	20	749,506	1,365,000	615,494
Michigan	23	238,722	436,000	197,278
Wisconsin	10	220,819	293,500	72,681
Minnesota	1	1,373	50,000	48,627
Missouri	8	32,736	222,000	189,264
Colorado	3	20,290	100,000	79,710
Oregon	1	10,411	15,000	4,589
Washington	1	.....	10,000	10,000
Totals	141	2,441,729	4,698,000	2,256,271
Grand totals	569	9,273,455	16,296,793	7,023,338

It will be noticed from this table that in the Middle States the production of pig iron more closely approaches the capacity of the furnaces than in any other section of the country, the capacity of the furnaces being 7,690,593 net tons and the actual production 4,883,187 tons, the excess of the capacity over production being 2,807,406 tons. In the Southern States the capacity of the furnaces aggregates 3,841,200 tons, the actual production 1,914,042 tons, and the excess of capacity over production 1,927,158 tons. In the Western and Pacific States the capacity of the furnaces aggregates 4,698,000 tons, the actual production 2,441,729 tons, and the excess of capacity over production 2,256,271 tons. In the whole country the capacity of all the furnaces aggregates 16,296,793 tons, the production 9,273,455 tons, and the excess of capacity over production 7,023,338 tons. By dividing the number of furnaces in each section into the production of pig iron in 1891, we find that the average production of each furnace in the Eastern States in that year was 2464 net tons; in the Middle States, 18,019 tons; in the Southern States, 13,385 tons, and in the Western and Pacific States, 17,317 tons. The average production of each furnace in the whole country was 16,298 tons.

Production and Capacity of the Charcoal Furnaces by States and Districts.

In the following table is given the production and capacity of the charcoal furnaces of the country by States and districts:

States.	Number of completed charcoal furnaces, January 1, 1892.	Production of charcoal pig iron in 1891. Net tons.	Annual capacity of completed charcoal furnaces, January 1, 1892. Net tons.	Excess of capacity of charcoal furnaces over production in 1891. Net tons.
New England:				
Maine	1	.....	6,000	6,000
Mass.	4	10,069	19,500	9,431
Connecticut	9	24,428	41,500	17,072
Totals	14	34,497	67,000	32,503
Middle States:				
New York	9	11,643	67,500	55,857
Penna.	15	11,819	61,700	49,881
Totals	24	23,462	129,200	105,738
Southern States:				
Maryland	8	10,362	54,200	43,838
Virginia	14	3,624	52,000	48,376
N. Carolina	.....	523	.....	.....
Georgia	4	17,636	47,000	29,364
Alabama	15	87,344	211,000	123,656
Texas	4	20,902	58,000	37,098
Kentucky	3	3,795	53,000	49,205
Tennessee	6	51,243	56,000	4,757
Totals	54	195,429	531,200	336,294
Western and Pacific States:				
Ohio	12	22,168	53,000	30,832
Michigan	23	238,722	436,000	197,278
Wisconsin	6	105,383	116,500	11,117
Missouri	3	16,128	47,000	30,872
Oregon	1	10,411	15,000	4,589
Washington	1	.....	10,000	10,000
Totals	46	392,812	677,500	284,688
Grand totals	138	646,200	1,404,900	759,223

From this table it will be seen that the capacity of the charcoal furnaces in the New England States aggregates 67,000 net tons, the production 31,497 tons, and the excess of capacity over production 32,503 tons. In the Middle States of New York and Pennsylvania, New Jersey having no charcoal furnaces, the capacity of the furnaces aggregates 129,200 net tons, the production 23,462 tons, and the excess of capacity over production 105,738 tons. In the Southern States the capacity aggregates 531,200 net tons, the production 195,429 tons, and the excess of capacity over production 336,294 tons. In the Western and Pacific States the capacity aggregates 677,500 net tons, the production 392,812 tons, and the excess of capacity over production 284,688 tons, the great charcoal-producing States of Michigan and Wisconsin alone producing a larger quantity of this grade of pig iron than the remainder of the country, namely, 344,105 net tons, as compared with 302,095 net tons. Wisconsin, it may be mentioned, has more than doubled its production of charcoal pig iron since 1887, when only 47,523 net tons were produced within the borders of that State. It will also be observed that the capacity of the charcoal furnaces of Michigan and Wisconsin aggregates 552,500 net tons, while the total production of charcoal pig iron in the whole country in 1891 amounted to only 646,200 tons, the capacity of these two States being within less than 100,000 tons of the total quantity produced. Wisconsin also enjoys the distinction of having within her borders a charcoal furnace which has produced more charcoal pig iron in one week than any other charcoal furnace in the world in a like period. This feat was accomplished in October, 1890, the

furnace producing 1009 gross tons of pig iron in a single week. The largest quantity produced in one day was 150 gross tons, and the smallest 141 tons. The ores used were from the Gogebic range, the average consumption being 4021 pounds to the ton of iron produced. A little over 82 bushels of charcoal and 174 pounds of limestone were used to smelt each ton of pig iron.

By dividing the number of charcoal furnaces in each geographical division into the production of pig iron in that division we find that the average production of each furnace in the New England States was 2464 tons; in the Middle States, 978 tons; in the Southern States, 3619 tons, and in the Western and Pacific States, 8539 tons. The average production of each furnace in Michigan was 10,379 tons, and in Wisconsin 17,564 tons. The average production of each charcoal furnace in the whole country was 4683 tons.

Preduction and Capacity of the Bituminous Coal and Coke Furnaces by States and Districts.

The production and capacity of the bituminous coal and coke furnaces of the country by States and districts will be found in the following table:

States.	Number of completed bituminous furnaces, January 1, 1892.	Production of bituminous pig iron in 1891. Net tons.	Annual capacity of completed bituminous furnaces, Jan. 1, 1892. Net tons.	Excess of capacity of bituminous furnaces over production in 1891. Net tons.
Middle States:				
New York..	3	115,410	121,000	5,590
Penna.....	80	2,654,274	3,858,200	1,203,926
Totals....	83	2,769,684	3,979,200	1,209,516
Southern States:				
Maryland...	5	127,844	409,000	281,156
Virginia....	19	327,103	625,000	297,897
N. Carolina.	1	3,080	6,000	2,920
Georgia.....	2	38,205	60,000	21,795
Alabama....	38	803,810	1,407,000	603,190
W. Virginia.	4	96,637	184,000	87,363
Kentucky..	7	46,430	227,0 0	180,570
Tennessee..	13	275,504	392.000	116,496
Totals ...	89	1,718,613	3,310,000	1,591,387
Western and Pacific States:				
Ohio.....	60	1,137,047	2,123,500	986,453
Indiana. ..	2	8,657	30,000	21,343
Illinois.....	29	749,506	1,365,000	615,494
Wisconsin..	4	115,436	177,000	61,564
Minnesota..	1	1,373	50,000	48,627
Missouri ...	5	16,608	175,000	158,392
Colorado....	3	20 290	100,000	79,710
Totals....	95	2,048,917	4,020,500	1,971,583
Grand totals.	267	6,537,214	11,309,700	4,772,486

It will be observed that the New England States have been omitted entirely from the above table, as that section of the country manufactures charcoal pig iron only. In the Middle States New York and Pennsylvania again only appear, New Jersey, as will be seen in the following table, producing all the pig iron made in that State with anthracite and mixed anthracite coal and coke as fuel. The capacity of the bituminous coal and coke furnaces in the two Middle States aggregates 3,979,200 net tons, the production 2,769,684 tons, and the excess of capacity over production 1,209,516 tons. In the Southern States the capacity aggregates 3,310,000 tons, the production 1,718,613 tons, and the excess of capacity over production 1,591,387 tons. In the Western and Pacific States the capacity aggregates 4,020,500 tons, the production 2,048,917 tons, and the excess of capacity over production 1,971,583 tons. In the whole country the capacity aggregates 11,309,700 tons, the production 6,537,214 tons, and the excess of capacity over production 4,722,486 tons. By dividing the furnaces of each section into the production of their respective sections we find that the average production of each furnace in the Middle States was 33,370 tons, in the Southern States 19,310 tons, and in the Western and Pacific States 21,568 tons. The average production of each furnace in the whole country was 24,484 tons. It is doubtless generally supposed that the greatest average production for the bituminous coal and coke furnaces of the country would be found in Pennsylvania, but, as will be seen by referring to the table, this is not the fact, as to Illinois belongs this honor, the average production of each bituminous coal and coke furnace in Pennsylvania being 33,178 net tons and in Illinois 37,475 tons. Pennsylvania, however, has the honor of having located within her borders a single coke furnace which has averaged over 100,000 tons yearly for the past two years, with the probabilities strongly in its favor of reaching over 300,000 tons in three years. This great output was accomplished on a single lining, and exceeds by far that of any other blast furnace in the world. It will thus be seen that in both coke and charcoal furnace records the United States leads the world, the outputs referred to not even being approached by a single blast furnace in this or any other country.

The Production and Capacity of the Anthracite and Mixed Anthracite and Coke Furnaces by States and Districts.

The production of anthracite and mixed anthracite coal and coke pig iron is confined entirely to the Middle States. One of the Southern group of States, Maryland, produced 11,505 tons of pig iron in 1886 and 18,473 tons in 1887 with anthracite coal and coke as fuel, but since these years not a single ton of pig iron has been produced in this State with these fuels. The production and capacity of the anthracite and mixed anthracite coal and coke furnaces of the country by States and districts will be found in the following table:

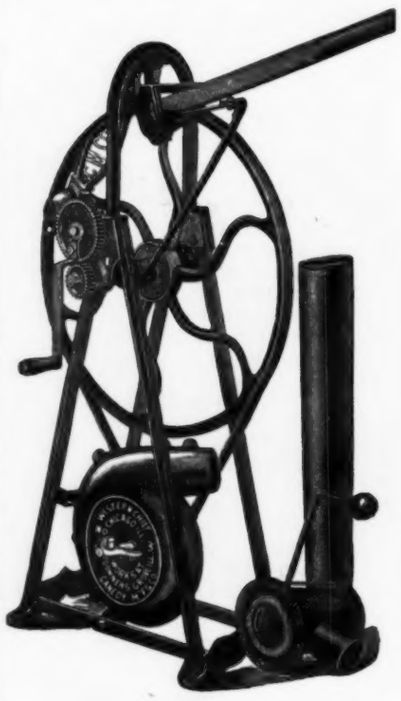
States.	Number of completed anthracite furnaces, January, 1, 1892.	Production of anthracite pig iron in 1891. Net tons.	Annual capacity of completed anthracite furnaces, January, 1892. Net tons.	Excess of capacity of anthracite furnaces over production in 1891. Net tons.
New York..	25	225,872	565,000	339,128
New Jersey.	15	103,589	274,345	170,756
Penna..	124	1,760,580	2,742,848	982,268
Total.....	164	2,090,041	3,582,193	1,492,152

The annual capacity of the anthracite and mixed anthracite coal and coke furnaces in the three States named above is 3,582,193 net tons, the production 2,090,041 tons, and the excess of capacity over production 1,492,152 tons. Dividing the number of furnaces into the quantity of pig iron produced, it is found that the average production of each of the 25 furnaces in New York in 1891 was 9035 net tons; of the 15 furnaces in New Jersey, 6906 tons; and of the 124 furnaces in Pennsylvania, 14,198 tons; while the average production of each of the 164 furnaces in the three States was 12,744 tons.

A large contract for steel collars for artillery horses depends on experiments now making by a manufacturer.

A Crank or Lever Blower.

This blower is so constructed that it may be driven by either the crank or lever, the arrangement being such that each works independently of the other. When the crank works the gear and doubles the speed, the lever is idle. As soon as the crank, is released both gears stop and remain idle while the lever is used, and until the handle is worked, when they immediately engage. As there are neither ratchet pawls nor dogs to rattle, the



A Crank or Lever Blower.

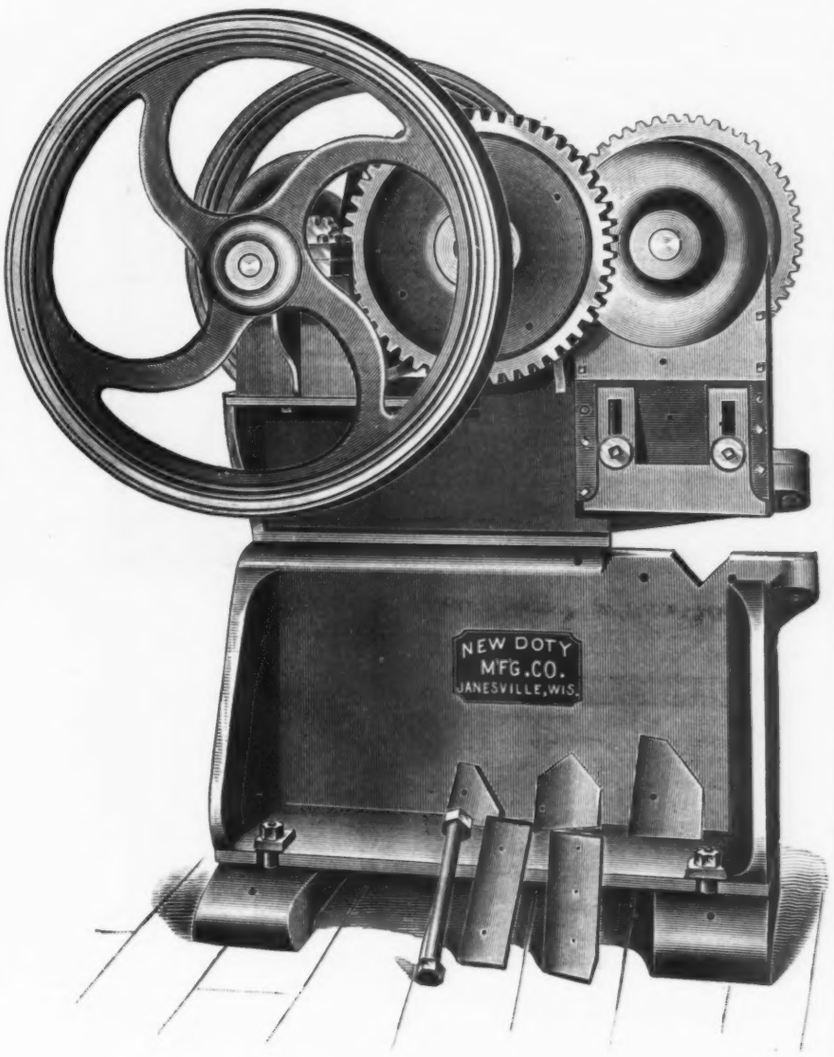
machine is noiseless. This blower is made by the Canedy Mfg. Company of Downer's Grove, Ill.

Bells of special interest seem to be a large part of the casting at the Clinton H. Meneely Bell Foundry, Troy, N. Y., just now. A peal of three bells has just been shipped to a Russian Greek church in Jersey City, each bell being peculiarly inscribed. Another peal has been ordered for one of the finest exchange buildings in the West. Another is going to a Roman Catholic church on the plains. A bell is now being finished for a Virginia gentleman as a memorial of his deceased wife. In the casting of this bell gold and silver mementos were thrown in the molten metal as affectionate tributes. The Westminster peal of bells, ordered for St. Agnes' chapel New York City, by Trinity Corporation, is nearly completed. The largest bell of this peal weighs about 7000 pounds and the whole set nearly 7 tons.

The great bridge across the Mississippi at Memphis is just finished, and May 12 the event will be duly celebrated. Some idea of the immensity of this structure may be gained from the fact that the length of the bridge and the approaches from the Arkansas side to the landing on the Tennessee side is 3 miles; the length of the bridge proper is $\frac{1}{4}$ mile, and the length of the longest span, which is the third longest in the world, is 794 feet. There are 5 spans to the bridge, which is built on the cantilever principle. Nine thousand tons of steel has been used in its construction and it has cost its builders, the Kansas City, Fort Scott and Memphis Railroad, about $3,000,000.

Shear for Heavy Work.

The New Doty Mfg. Company of Janesville, Wis., have recently brought out a shear which is designed for heavy work in boiler shops and other places where sheet metal is worked. It will cut plates ¾ inch thick and of any width or length. It will also cut 1½-inch round iron or its equivalent in flat iron, and also 4-inch angle iron. The body of the machine is so constructed that there is plenty of clearance to allow the plate to be fed into the machine after each cut. The lower knife is stationary, while the upper one is bolted to a movable head or plunger which is moved by an eccentric and gearing. The machine has two heavy balance wheels, is double back geared and has tight and loose pulleys. It is supplied with a clutch by means of which it can be thrown in or out of gear instantly, thus being entirely under the control of the operator. It is strongly and heavily made, weighing 8400 pounds. All the shafts, bolts, &c., are of steel. When desired, the necessary knives for cutting angle iron up to 4 inches, are provided. The machine is supplied with stubs for gauges and also with a large reinforce bolt to be used when cutting bar or angle iron.



SHEAR FOR HEAVY WORK.

The Pennsylvania Railroad Company have commenced building a large number of cheap gondola excursion cars for the World's Fair business, which can afterward be used for freight traffic. The cost will be less than $1000 each. They will also build 7000 new freight cars, at a cost of $4,000,000.

It is a striking fact that the foreign commerce of two of the principal Southern ports for the past fiscal year was about the same as for the year preceding the outbreak of the Civil War. The exports of New Orleans for the year 1860 were $107,800,000, and the imports $22,900,000. For the fiscal year 1891 the exports were $108,000,000, and the imports $20,200,000. The exports of Charleston for 1860 were $21,100,000, and the imports $1,500,000 For the fiscal year 1891 the exports were $21,900,000 and the imports less than $1,000,000. In the interval of 30 years Mobile has fallen from its place among the principal ports, and Baltimore, Galveston, Newport News and others have advanced in rank.

The profits realized by Great Britain from her African trade make large figures. A statement recently published shows that during the last year the value of imports into Cape Colony was £7,518,437, as against £8,475,050 in the previous year, while the exports rose from £9,083,718 in 1889 and £9,652,982 in 1890 to £10,934,970 in 1891. Of the imports nearly £6,000,000 worth had been obtained from the United Kingdom, £654,000 from other parts of the Empire, and the remainder from the United States and Brazil.

A Sheet-Iron Gauge.

Last week a committee of six, headed by Wm. Weihe, president of the Amalgamated Association of Iron and Steel Workers of Pittsburgh, visited Washington for the purpose of conferring with Wm. L. Stone, Congressman, to urge upon Congress the necessity of establishing a uniform gauge for iron and steel sheets and plates. Such a bill has already been introduced in Congress by Representative Stone, and it had been referred to the Committee on Coinage, Weights and Measures. This is the first attempt made with the object of securing uniformity, and it is expected that the change from the existing custom of each manufacturer regulating the gauge of his product to one of universal uniformity will be of great benefit and convenience to both manufacturer and employee when the time comes for arranging the Amalgamated scale for sheet and plate mills. Under the arrangement provided for by the Stone bill, the manufacture of plates and sheets according to the standard adopted will be compulsory, and any change will be an infraction of law. The schedule as proposed in the Stone bill is appended:

Number.	Weight per square foot.	Decimal parts of an inch.
0000000	20.	0.5
000000	18.75	0.46875
00000	17.50	0.4375
0000	16.25	0.40625
000	15.	0.375
00	13.75	0.34375
0	12.50	0.3125
1	11.25	0.28125
2	10.625	0.265625
3	10.	0.25
4	9.375	0.234375
5	8.75	0.21875
6	8.125	0.203125
7	7.5	0.1875
8	6.875	0.181875
9	6.25	0.15625
10	5.625	0.140625
11	5.	0.125
12	4.375	0.109375
13	3.75	0.09375
14	3.125	0.078125
15	2.8125	0.0703125
16	2.5	0.0625
17	2.1875	0.0546875
18	1.875	0.046875
19	1.71875	0.04296875
20	1.5625	0.0390625
21	1.40625	0.03515625
22	1.25	0.03125
23	1.125	0.028125
24	1.	0.025
25	0.90	0.0225
26	0.80	0.02
27	0.72	0.018
28	0.64	0.016
29	0.56	0.014
30	0.5	0.0125
31	0.42	0 0105
32	0.38	0.0095
33	0.34	0.0085
34	0.29	0.00725
35	0.21	0.00525
36	0.17	0.00425

The text of the bill contains the following provisions:

Section 1. And it shall be lawful throughout the United States of America to employ the foregoing schedule, and no other, in all contracts and dealings with reference to the weights and measures contained in said schedule; and the same and no other shall be used in determining duties and taxes levied by the United States of America on all articles contained in said schedule.

Sec. 2. That the Secretary of the Treasury is authorized and required to prepare a standard gauge for the purpose of carrying out the provisions of the foregoing section, and when prepared, said standard gauge and no other shall be used in determining weights and measures under said schedule.

Frederick Siemens' New Furnace.

Some time since there was presented before the Iron and Steel Institute a paper descriptive of the regenerative furnace designed by Frederick Siemens of Dresden, embodying some features for which great results were claimed. A number of patents have lately been granted the inventor which develop his ideas more fully than the paper alluded to. Mr. Siemens brings forward plans for the working of regenerative furnaces which depart quite radically from accepted ideas, and which have been vigorously attacked by that well-known German metallurgist, Friedrich C. G. Mueller.

Mr. Siemens' principal idea is the return to the producer of a part of the gases produced by combustion in order to again render them combustible by taking up from the hot fuel in the producer a portion of the carbon. The accompanying drawings show the apparatus designed by him to achieve his aims. In the drawings A is the combustion chamber or hearth; B is one of the regenerative chambers, of which there are two, which may be alternated in the usual way by means of the reversing valve W, Figs. 1 and 2. The regenerators employed may be of the usual reversible type, as shown in Figs. 1 and 3, serving to heat the air supplied to the furnace and that to the gas producer, or the regenerators may be of the continuous type, as shown in the modification, Fig. 4. C is the gas producer, which is shown as a single chamber and which communicates on opposite sides thereof with the combustion chamber A by either of the two passages H and gas ports D, as determined by the operation of either one or the other of the two valves V. The hot air which flows from the regenerator B by means of the port D is divided into two portions after leaving the regenerator. One portion is transmitted to the flue and passage F, Figs. 1, 3 and 7, of the furnace port E, where it meets the gas passing from the producer by the passage D, with which it is combined, producing a flame which sweeps around the combustion chamber A in horseshoe form, this being clearly indicated in Figs. 2 and 8. The products of combustion may have exit by the opposite port E', passing from this a portion to heat the opposite regenerative chamber, and a portion, aided by means of the steam jet K', Fig. 5, is caused to pass through the hot fuel in the producer. The other portion of hot air from the regenerator is caused to pass through the mass of fuel in the producer by means of the blast pipes or steam jet K.

By regulating the action of the steam jets or blast pipes K and K' any desired portion of the hot air or the incombustible products of combustion from the combustion chamber can be supplied to the producer C. When it is desired to operate the latter without employing the heated air or the portion of the products of combustion usually diverted under the grate L of the producer, the passages under the hearth of the producer may be closed by means of the valves U. The steam jet or blast pipe J is provided so that air at the ordinary temperature may be introduced under the producer at will.

In the modification of the furnace providing for a vertical pit furnace, as shown in Fig. 3, air is supplied to the furnace under pressure through the pipe M by a blower or pump to the reversing valve W, through which it passes to one or the other of the two regenerative chambers. In Figs. 4 and 5 an arrangement is shown of gas and air ports for supplying combustible gases and discharging the products of combustion from the chamber A. In this case E and E' are air ports and R and R' corresponding gas ports, O being the exhaust port. The flames sweep from the ports on one side around the furnace in horseshoe form, leaving it by means of the port O. Another arrangement of gas and air port is indicated in Fig. 6, in which S always delivers gas from the producer C, being flanked by ports T and T', of which one acts at a time as an air delivery port from one of the regenerators, while the opposite one carries the products of combustion off. Figs. 7 and 8 show the furnace with a long combustion chamber and a producer and pair of regenerators at each end. The producers may be worked simply as producers in the usual manner, or the products of combustion each side of the furnace may be diverted through the respective producers. Mr.

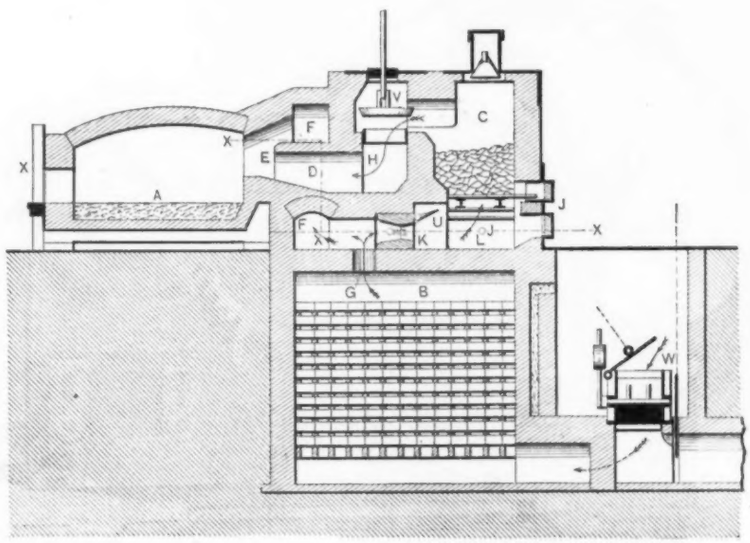


Fig. 1.—Longitudinal Section, Y Y, Fig. 2.

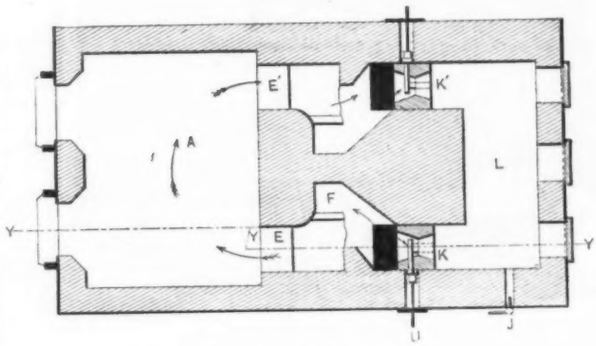


Fig 2.—Sectional Plan, X X, Fig. 1.

FREDERICK SIEMENS' NEW FURNACE.

Siemens describes his aim as follows: My object in introducing a portion of the products of combustion of heated air into the producer is, first, the aid in maintaining the incandescence of the fuel in the producer, and, second, to have the heated air and gas transmitted through the producer pick up sufficient carbon in their passage to render them combustible. To heat the air introduced into the producer in order to reduce the quantity of air necessary to effect combustion and hence to reduce the quantity of nitrogen liberated and of carbonic gas generated in the producer.

Mueller's Criticism.

In *Stahl und Eisen*, the leading German authority on iron and steel manufacture, F. C. G. Mueller criticises the plan which underlies this new construction. Suppose that it be assumed that the producer is charged with pure coke; then it will furnish gas consisting of 43.3 per cent. of carbonic oxide and 65.7 per cent. of nitrogen, if the coke were burnt with the theoretical quantity of air by complete combustion. The product of the combustion, partly due to the regenerator and partly to the gas producer, where, after being generated, they yield gas of the above composition. Under these circumstances, exactly one half of the waste gas would have to be brought back to the gas producer. If this proportion were not closely adhered to there would be in the waste gases either unburnt carbonic oxide or free oxygen. But since the waste gases cannot be carried through the circle by natural draft, a steam injector must be used, the result being that water gas is at the same time made. Assume for simplicity's sake that for one part of carbonic acid one part of water enters below the grate of the gas producer. Since three parts of carbonic oxide are obtained for each part of carbonic acid regenerated, only one-third of the carbonic acid formed can be returned, together with one-third of the steam. The injector must therefore draw exactly one-third of the waste gases and at the same time must blow in two-thirds the quantity of water referred to carbonic acid. The composition of the heating gas under these conditions is as follows:

	On coke.		On bituminous coal.
Carbonic oxide	38.7	CO	36.3
Hydrogen	12.9	Hydrocarbons.	18.2
Nitrogen	48 4	N_2	45.5
	100.0		100.0

This is assuming that the producer can run with that part of the gases of com-

bustion which are brought to it. It will, however, be necessary to obtain a primary supply of air for combustion in the gas producer. For simplicity's sake, it will be assumed that as much coke is gasified by direct combustion as is converted into gas by the introduction of waste gas carrying carbonic acid. In all four volumes of oxygen are accompanied by 15 volumes of nitrogen from the atmosphere which goes to the stack, with four volumes of carbonic acid and four-fifths volume water, since it is self-evident that as much nitrogen must leave the producer as is introduced into it. The volume returned to it is one-fourth of this volume, and is therefore 3.76 volumes added to the producer gas. Therefore 3.76 volumes of nitrogen are added for every volume primary air introduced. Therefore we have 7.52 volumes of nitrogen for five volumes of carbonic oxide and one volume of hydrogen, which leads to the following composition:

Carbonic oxide	37.0
Hydrogen	7.4
Nitrogen	55.6
Total	100.0

For raw coal Dr. Mueller figures out the following:

Carbonic oxide	34.5
Hydro-carbons	13.8
Nitrogen	51.7
Total	100.0

Until now Dr. Mueller has assumed that the gas producer works up to theoretical efficiency; that is to say, that the carbonic acid is converted in carbonic oxide. As a matter of fact, a certain amount of carbonic acid is not decomposed. As repre-

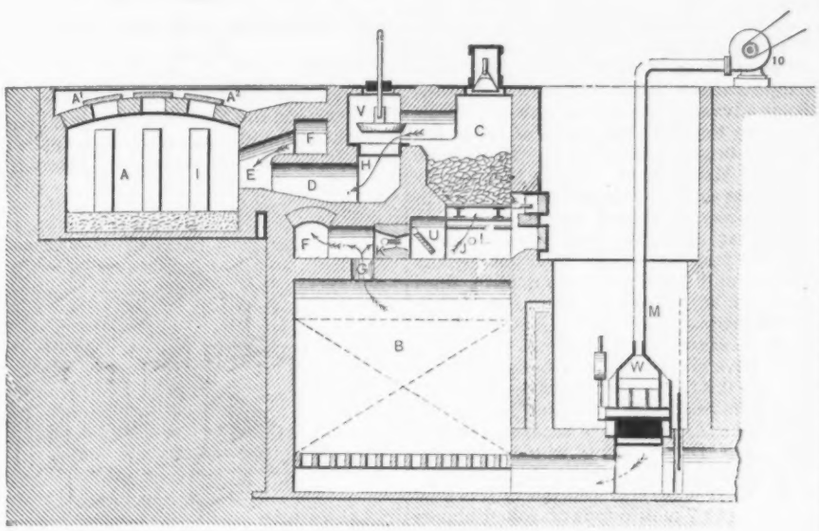


Fig. 3.—Heating Chamber Arranged for Vertical Ingots.

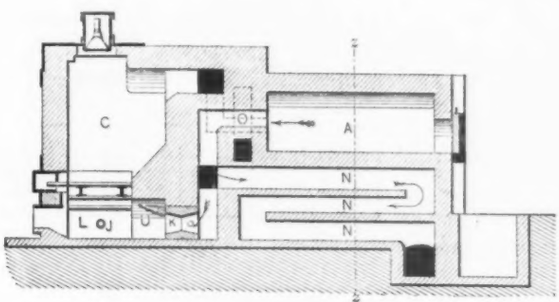


Fig. 4.—Furnace with Continuous Regenerator.

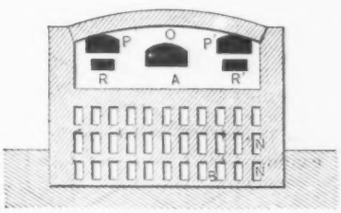


Fig. 5.—Transverse Section, z z, Fig. 4.

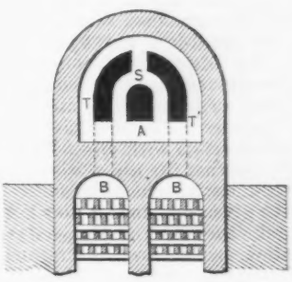


Fig. 6.—Transverse Section Furnace Chamber.

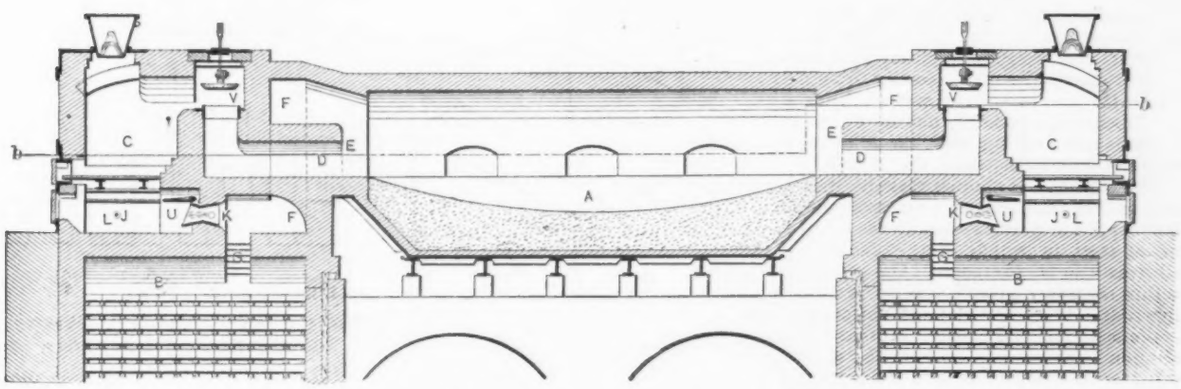


Fig. 7.—Longitudinal Section, a a, Fig. 8.

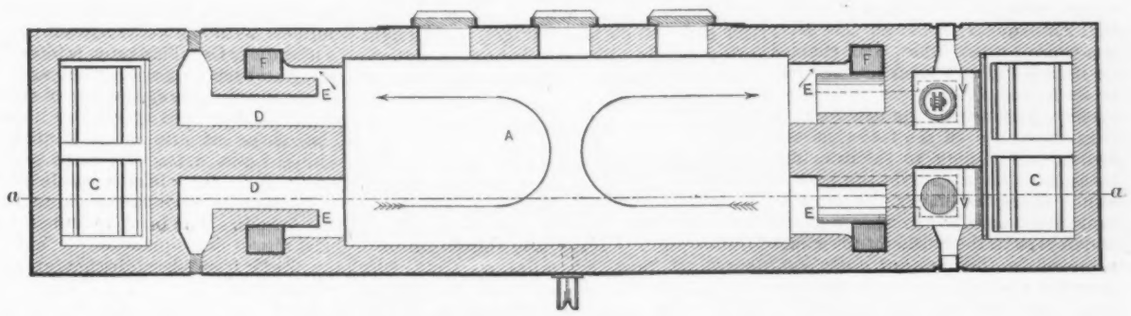


Fig. 8.—Sectional Plan, b b, Fig. 7.

FREDERICK SIEMENS' NEW FURNACE.

senting practical conditions pretty closely, it may be assumed that one-half volume carbonic acid accompanies the three volumes of carbonic oxide, so that there is in the gas for coke and coal the following:

	Coke.		Coal.
Carbonic oxide	29.6		28.1
Carbonic acid	4.9		4.7
Hydrogen	9.9	Hydrocarbons.	14.1
Nitrogen	55.6		53.1
Totals	100.0		100.0

A certain amount of carbonic acid passes through the regenerator and decomposes, the quantity being assumed at one half volume, which would yield the following composition:

	Coke.		Coal.
Carbonic oxide	31.4		29.6
Hydrogen	6.3	Hydrocarbons.	11.8
Carbonic acid	3.1		3.0
Nitrogen	59.2		53.6
Totals	100.0		100.0

Dr. Mueller goes into elaborate calculations which show that it is impossible to keep a producer going run exclusively by waste gas mixed with steam. He figures out that if direct combustion takes place so conducted that as much carbon is burnt by it as is consumed through the reduction of carbonic acid from the waste gases, then the latter must enter the coke with a temperature of 1200°, while the air from combustion must be preheated to 800° F. When steam is simultaneously introduced the process can only be carried through when more than one-half of the coke is converted into gas by direct combustion.

Dr. Mueller points out that favorable results obtained in connection with the new principal in its use in some heating furnaces in England have been reached by comparison with direct-fired furnaces. He urges that the use of waste gases from the combustion chamber under the producer be given up, since it does not increase the efficiency nor the temperature of combustion, but does offer difficulties by reason of increased complications.

Rolling Copper and Brass Tubes.

At the Frankfort Electrical Exposition last year an exhibit was made which has attracted considerable attention among manufacturers of brass and copper tubing. In 1891 the firm of C. Heckmann of Duisburg-Hochfeld, Germany, put in a Mannesmann skew rolling mill, the principle being the same as that adopted in rolling solid steel pipe. It appears that the Mannesmann mill has proved more successful with copper and brass than it has in the case of steel, in which some difficulties still remain to be overcome. One reason for this relatively greater success is that copper and brass are of more uniformly ductile material, and another is that the rolling-mill process can be followed more readily by the ordinary method of drawing. The tubes are delivered by the rolling mill uniform in thickness, but they are rough and have spiral irregularities which naturally are the result of the method of manufacture. Subsequent drawing, however, furnishes clean, bright tubes, and enables them to be reduced to a thickness not obtainable by rolling.

The real importance of the new method of rolling tubes lies in the fact that it is an operation preliminary to the drawing, and possesses advantages over the present method of casting the blanks. Naturally, cast blanks have attached to them a rough skin, which even in the finished tube makes its appearance in the form of dull spots. Experiments to get rid of this sand crust by turning and drilling have not led to favorable results. Another advantage of rolling the blanks is that they can be made much lighter. While the cast blanks are 0.4 to 0.6 inches thick, rolled blanks are being made down to 0.2 to 0.23 inch, and work is now going forward to get them down to 0.12 inch and 0.8 to 7.2 inches external diameter.

Another point looked upon as favorable to the rolled blanks is that the metal possesses greater tensity and tenacity, and may be drawn down much more rapidly. It is often necessary, starting with a cast blank, to draw 20 to 30 times, and it often happens that a break occurs when the tube is far advanced toward its finished condition, so that the maximum of labor has already been expended on it. In the case of the Mannesmann rolled blanks any weakness due to unsound metal shows in the process of rolling, so that the waste occurs at an early stage of the process, and the product finally turned out by the rolling mill must be high in quality, since it would not otherwise stand the torture of the process. The firm in question have made solid tubes 20, 26 and 33 feet long. They have also rolled stay bolts for locomotives 0.8 to 1.0 inch outside diameter, with 0.08 to 0.2 mm. hole, and have rolled hollow hexagonal rods of brass and bronze for nuts. Dr. Wedding, who made a report on the subject before a Berlin society, states that one Mannesmann mill is now turning out 7 metric tons of rolled blanks per ten-hour shift. They have put on the market tubes in competition with English and French manufacturers, to be used for the rolls of cotton printers, their length being 26 feet. These rolls have an outside diameter of 5.9 to 7.2 inches, and walls 1.2 to 2 inches thick.

A cigar-shaped submarine boat 30 feet in length, invented by George C. Baker, formerly of the Baker Wire Company, has been successfully tested at Detroit Under water the boat was able to attain a speed of over 10 miles an hour, turn around and rise or sink with the greatest ease. The boat was submerged several times under varying conditions, and it was demonstrated that the peculiarly constructed propellers were well adapted to their purpose. The boat is equipped to run by steam power while on the surface, but under the water the motive force comes from a powerful electric storage battery, the cells being charged by the same engine that runs the boat on the surface.

The Stevenson and York Checker Brick.

A new form of fire brick to be known as the Stevenson and York brick has just been brought out, and a patent has been applied for. It is the invention of John L. Stevenson, who was formerly connected as engineer with the well-known firm of J. P. Witherow & Co. This brick is intended for filling or backing hot-blast stoves for blast furnaces and the regenerator chambers of steel melting and reheating furnaces. The shape of the brick is that of a double Latin cross, the head and arms being of the same length, while the body or distance between the two arms is twice that length. The brick intended for hot-blast stoves has square edges and a flat top, Figs. 1 and 2, while that intended for regenerators, Figs. 3, 4, 5 and 6, has a beveled top to prevent the deposit of dust, &c. Illustrations herewith given show the shapes of these bricks and the manner in which they are applied in the construction of stoves and furnaces.

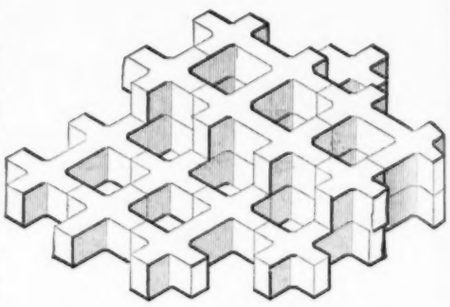


Fig. 2.—Method of Packing for Hot-Blast Stoves.

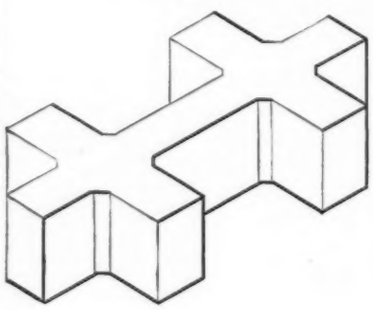


Fig. 1.—Brick for Hot-Blast Stoves.

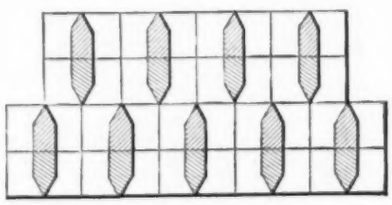


Fig. 4.

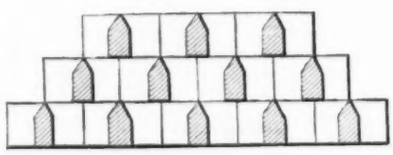


Fig. 5.

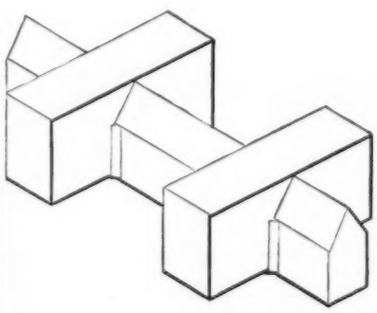


Fig. 3.—Furnace Regenerator Brick.

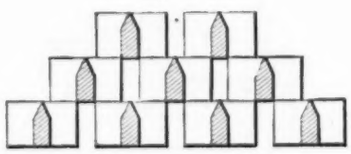


Fig. 6.

Figs. 4, 5 and 6.—Manner of Packing for Steel Furnace Regenerators.

THE STEVENSON AND YORK CHECKER BRICK.

When used for packing or filling hot-blast stoves for blast furnaces, the bricks are so laid that they are made to break joints vertically, as in ordinary brick work, thus forming a solid structure well bonded together, and that cannot get displaced by explosions or cleaning by concussion, an advantage which, it is claimed, is not possessed by any other brick used for packing hot-blast stoves. The bricks may also be set to break joint horizontally as in the original Cowper stove. The setting may also be done to form alternate layers so as to break the current of air or gas as it passes through the mass of brick work. This, it is further claimed, cannot be done with any other brick, forming at the same time an excellent bond. The bricks can be made to form square, hexagonal, octagonal or round flues ; but the square is stated by the inventor to be much better, as the mass of brick work throughout the stove is of the same thickness, which may be 2 inches, 2½ inches or 3 inches, and gives a greater heating surface for the space occupied. In closing up round the inner lining of the stove this brick has this advantage, that there is always a large brick next to the lining, thus avoiding small pieces, which are liable to get loose and endanger the rest of the brick work, especially in the case of single bricks jointed at the corners.

These bricks make excellent checkering for regenerator chambers of melting and reheating furnaces.

There are many ways of setting for different purposes, some of which are shown on accompanying drawing.

The manner of construction of this stove is claimed to be cheaper than that of any other, and it has no intricacy of building so apparent in many now in the market.

The heating surface is double that of a Whitwell stove of equal diameter and hight, according to the usual mathematical calculations. Further information will be given by James E. York, general manager of the Ironton Steel Structural Company, Duluth, Minn.

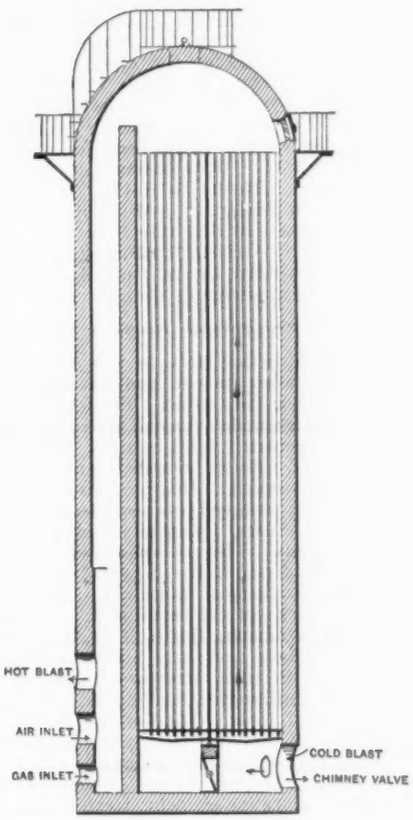


Fig. 7.—Hot-Blast Stove.

J. H. Sternbergh & Son, Reading, Pa., have taken a fresh lease of vigorous life with the erection of their new and vastly improved workshops built last year to take the place of the former establishment, which was almost totally destroyed by the disastrous fire of February, 1891—the rolling mill alone escaping. They are able to report a steady and constant advance all along the line of their special makes in steel and iron bolts and nuts, rivets and structural materials; and we are informed that notwithstanding an enforced suspension of manufacture for nearly six months while the resuscitation of the buildings was progressing, their output for 1891 was greater than that of any previous 12 months, while the current year promises to be better. The present buildings cover a much larger area than the predecessors and are constructed on an improved plan with greater facilities and capacity. The main workshop, a spacious, airy and well lighted building, 360 feet long by 180 feet wide, contains all the machinery except the rolling mills, which are located in an adjoining house 230 feet in length and 100 feet in width. There is also a machine shop, 90 x 84 feet, in which all the machinery required for home use is made, the major part of it being constructed to original designs of J. H. Sternbergh himself. In addition to these workshops a large four-storied warehouse has recently been erected with ground space of 150 x 40 feet. A railway track running into the works connects them with the Philadelphia and Reading Railroad Company's system. Sternbergh & Sons are the makers of the Harvey Patent Grip Thread Track Bolt, for which they have an extensive demand from nearly all the principal lines of railway in the United States. Among others these bolts have been supplied by them to the New York Central, Northern Pacific, Lake Shore Michigan, Southern, New Jersey Central, Delaware and Hudson, Lehigh Valley and many Western railroads, besides all the local lines, and a large order has lately been received from a New York firm for these bolts for export. The firm are also supplying large quantities of their special make of boiler rivets both to Government yards and private builders for use in the

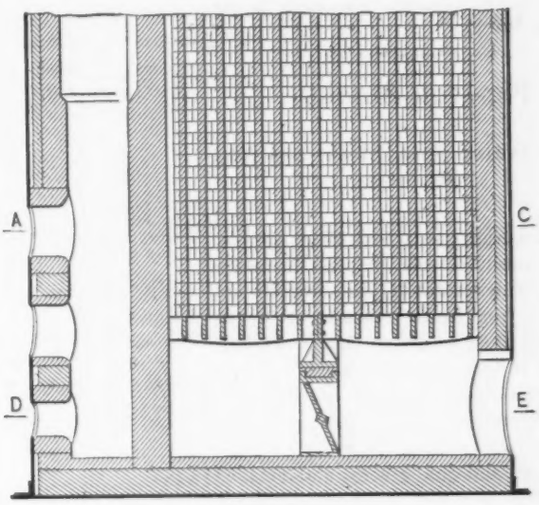


Fig. 8.—Section K G.

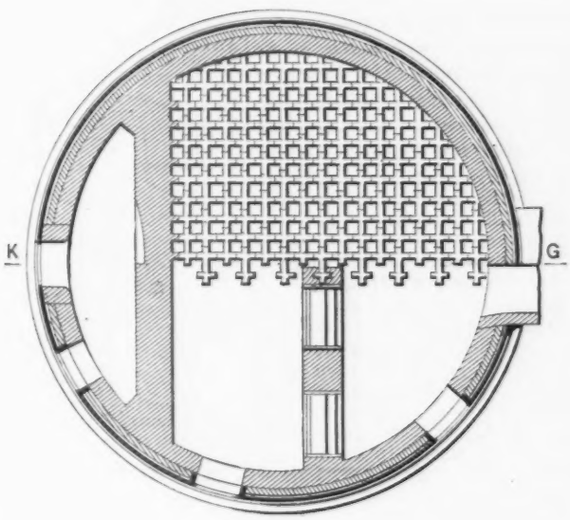


Fig. 9.—Sections A C and D E.

THE STEVENSON AND YORK CHECKER BRICK.

newly constructed vessels for the United States Navy. A contract is now on hand for all the tie rods and bolts required by the Baltimore City Passenger Railway Company for about 26 miles of rails, and a quantity of tie rods are being made for various parties. Over 500 hands are in constant employment on the works. J. H. Sternbergh & Son have a branch establishment at Kansas City, Mo., under the title of the Kansas City Bolt and Nut Company, where all their specialties are also manufactured. The whole of the machinery for those works was made at the Reading Works.

Pig-Iron Stocks.

Not Including Sold Stocks and Mill Supplies.

The American Iron and Steel Association has received from the pig-iron manufacturers full returns of the stocks of unsold pig iron in their hands or in the hands of their agents on March 31 last, and also full returns of the number of furnaces which were in blast at that date. This information we have compared with similar returns received by us for December 31 last, and the general and detailed results will be found in the accompanying tables. We also give the unsold stocks and the number of furnaces in blast on June 30 last.

Before presenting the comparative figures for December 31 and March 31 we wish distinctly to impress the fact upon our readers that we have carefully excluded all pig iron which has been sold and is yet on the furnace banks, and all pig iron which is in stock, but is intended for the use of the manufacturers in their own rolling mills or steel works. Our figures, therefore, relate solely to such stocks of pig iron as were actually on the market at the two dates mentioned.

On December 31 last the stocks of unsold pig iron which were in the hands of the makers or their agents amounted to 596,333 gross tons, and in addition there were in storage warrant yards 30,900 gross tons which were no longer under the control of the makers, making a total of 627,233 gross tons of unsold pig iron. On March 31 last there were in the hands of makers or their agents 718,579 gross tons of pig iron, and in addition there were 41,020 gross tons in storage warrant yards which the makers no longer controlled, making 759,599 gross tons of unsold pig iron, or 132,366 gross tons more than on December 31. This is the largest stock of unsold pig iron ever carried by the furnaces of this country, the next largest stocks being at the end of 1874 and 1875, when they amounted to 710,521 and 679,382 gross tons respectively. But our consumption in those days was not half what it is to-day.

The number of furnaces in blast has decreased from 313 on December 31 to 279 on March 31, or 34 in all, a fact which would afford much encouragement were it not accompanied by an increase in stocks. Taken together the decreased number of furnaces in blast and the large increase in stocks in three months plainly indicate that the consumption of pig iron has greatly fallen off during that period.

Our tables will show the States and districts in which stocks of pig iron have accumulated since December 31 last and in which furnaces have been blown out. The details which we present do not call for special comment, as every reader will study them for himself and draw his own conclusions:

Stocks According to Fuel Used.

	Stocks. Net tons.		
	June 30, 1891.	Dec. 31, 1891.	Mar. 31, 1892.
Bituminous	157,530	289,720	350,123
Anthracite	150,891	139,294	196,165
Charcoal	186,681	238,879	258,520
Totals	495,102	667,893	804,808

Stocks of Unsold Anthracite and Mixed Anthracite and Coke Pig Iron. Net Tons.

	June 31, 1891.	Dec. 31, 1891.	Mar. 31, 1892.
New York	57,711	49,379	48,695
New Jersey	39,128	22,939	33,445
Pennsylvania	54,052	66,976	114,025
Totals	150,891	139,294	196,165

Stocks of Unsold Charcoal Pig Iron. Net Tons.

	June 31, 1891.	Dec. 31, 1891.	Mar. 31, 1892.
Maine	16,230	17,672	19,428
Massachusetts			
Connecticut			
New York	11,989	14,813	18,086
Pennsylvania	8,842	7,976	7,724
Maryland	2,592	2,488	1,680
Virginia	3,300	600	
North Carolina	9,916	26,725	23,966
Georgia			
Texas			
Alabama	26,596	29,316	26,531
Kentucky	9,545	9,717	11,426
Tennessee			
Ohio	8,520	15,524	14,720
Michigan	51,764	72,663	88,500
Wisconsin	25,596	27,409	43,747
Missouri	6,314	8,037	
Oregon	5,177	5,934	2,912
Washington			
Totals	186,681	238,879	258,520

Stocks of Unsold Bituminous Coal and Coke Pig Iron. Net Tons.

	June 31, 1891.	Dec. 31, 1891.	Mar. 31, 1892.
New York	4,625	5,430	3,730
Pennsylvania	21,506	77,625	115,472
Maryland	400	51,368	80,386
Virginia	22,335		
North Carolina	20,103	30,332	43,525
Georgia			
Alabama			
West Virginia		3,800	2,688
Kentucky	6,498	14,044	19,506
Tennessee	13,323		
Ohio	52,256	68,087	67,778
Indiana	5,136	16,475	4,564
Illinois			
Michigan			
Wisconsin		11,561	
Minnesota			
Missouri	11,348	10,998	12,414
Colorado			
Totals	157,530	289,720	350,123

Stocks of Pig Iron in Pennsylvania and Ohio. Net Tons.

		June 31, 1891.	Dec. 31, 1891.	Mar. 31, 1892.
Pennsylvania.	Lehigh Valley	10,321	30,906	51,173
	Schulykill "	24,703	18,340	36,083
	U Sus. "	6,453	4,066	5,286
	L. Sus. "	10 075	12,424	20,251
	Juniata "	8,528	13,907	12,863
	Shenandoah "	3,706	25,158	65,289
	Allegheny Co.	895	20,261	15,680
	Mis. bit	10,877	19,939	22,272
	Charcoal	8,842	7,976	7,724
Ohio.	H. R. bit	31,364	25,755	25,758
	Mahoning Val.	6,310	28,330	27,715
	Hocking "	6,713	9,573	6,496
	Mis. bit	7,869	4,629	7,809
	H. R. char	8,520	15,524	14,520

WORLD'S FAIR NOTES.

The Government Aid Muddle.

Representatives of the World's Fair who appeared before Congressman Durborow's Committee in Washington last week succeeded admirably in making a glorious muddle of the effort to secure a Government appropriation. They had been authorized to ask for the passage of a bill to appropriate $5,000,000 as a stock subscription. When they formally laid the matter before the committee they changed the request for a stock subscription to a request for a loan, offering as security a second mortgage on the receipts of the exposition, reserving the right to place a first mortgage to other parties for $3,000,000, in case that additional amount should be found necessary. This step was taken, it appears, without consultation with the Board of Directors in Chicago, and excited much adverse criticism when it became known there. The delegation defended their action on the ground that they had become convinced in the meantime that Congress would not make an appropriation of $5,000,000 for the purchase of stock and that the proposition which they had made was the most favorable plan that could be devised for securing the approval of Congress to any scheme for aiding the exposition. Notwithstanding the opposition in Chicago to making the Government a preferred creditor, it seems very probable now that this is the only way in which a natinnal appropriation will be recommended by the Durborow Committee and approved by Congress.

Progress at Jackson Park.

Construction work on the fair grounds is increasing its gait, and traveled further last week than usual. The force of men on the grounds averaged above 6000 daily. The increased force comes in the employment of painters, plumbers and other finishing workers. Heavy construction work is nearly past, and is in progress only on the Manufactures, Electricity and Machinery buildings. There is some heavy work yet to be done on the domes of the Illinois and Government buildings, and on the iron decks of the battle ship. The Fisheries, Woman's, Horticulture, Transportation, Mines and Dairy buildings are completed in their structures, and "trim" work and interior finishing is progressing on all of them. The work of putting on exterior covering is in progress on every building on the grounds except Machinery Hall. The terrace walls around the interior waterways are being treated with staff covering. The landscape gardeners are busy, and the territory around the Horticulture Building, on the wooded island, and through the Midway Plaisance is beginning to be suggestive of flower beds.

Aside from the construction of the 15 buildings, the miscellaneous work on the grounds grows in importance as time advances. This includes the gardening, fence building, finishing of terrace walls, preparing the pile foundation of the grand fountain, the building of the electric subway, the new office building, the greenhouses, the propagating houses and the cleansing works. The new office building is going up very fast. Ground was broken for it ten days ago, and the roof is now going on the north wing.

What is claimed to be the biggest arch in the world is in position on the grounds. The first two roof trusses of the central hall of the Manufactures Building were finished last week. When work ceased Tuesday night the trusses were complete with the exception of the wedge piece, a section 24 feet long between the apex and the hip of the truss, which forms the keystone of the arch. These wedge pieces were put in position Wednesday morning

and the arches were complete. The traveler was removed and the work of erecting the second pair of trusses was begun. It required nine days of actual time to erect the trusses now in place. The succeeding pair of trusses will probably be placed in position in six or seven days. When the immensity of the work is considered this is remarkably quick time. These trusses span 388 feet outside measurement. They are 14 feet wide at the base. The extreme hight at the apex of the arch is 211 feet. At this point the truss is 10 feet wide, giving a clear hight from the floor of 201 feet. They weigh 300,000 pounds each, without the purlins or connecting structure. With the weight of the purlins added, the 27 main trusses average in weight 400,000 pounds each. They are made of steel. Before the erection of these trusses the largest in existence were said to be those in the Jersey City railway station. They span 250 feet, and are 90 feet high.

The carpentry work on the Manufactures Building is well advanced. The eight pavilions and the exterior walls are up. There remains to be built about 100 feet of the elecric subway. The contractors are working day and night on the pump house, which was blown down. The new structure has two walls up to the hight of the window sills, the iron columns are in place and part of the rafters set. The water well and conduit are about finished.

The battle ship, which has been apparently sleeping for some weeks, has awakened, and is progressing rapidly. All of the long-delayed iron work for the deck has been received, and 18 men are now punching the necessary holes for the placing of the deck beams. The frame works of the 12 guns are on the grounds. Of these four are 45 feet and eight 25 feet. All of the steel construction work of the deck is now ready to place, and the armor plates have been put on the hull from the water line to the line of the berth deck.

The roof work on the Government Building is finished. Painters are at work in various parts of the building. The frames for the skylights are in, and the main floor is about half laid. The gallery floors are all laid. Of the 120,000 square feet of corrugated iron roofing 77,500 feet are laid. About one fourth of the tin roofing is done. The first or lower section of the dome is in place, and all material for the second section is on the grounds.

The Illinois State Building has recovered from the twisting it received from the wind. The building is practically completed in its structure, except the dome. The skylight is all in place on the south roof, and skylight frames are in place in the clerestory. The roofing is finished.

Out of an estimated total of 75,000,000 feet of lumber to complete the buildings 53,000,000 feet, it is announced, has been placed. Eleven million, four hundred and eighty-five thousand, one hundred and twenty eight pounds of iron and steel has been placed, as against 34,174,934 pounds required.

Knocked Down Over a Million.

Exposition officials agreed last week to award the contract for furnishing 93,044 incandescent electric lights to the Edison General Electric Company at an average price of $5.95 per light. This includes the entire incandescent plant and its maintenance. This figure represents a saving of nearly $1,200,000 over the first bid submitted by the Edison Company, which was $18.50 per light, or a total of about $1,720,000, as against approximately $553,000, which the plant will now cost. The Edison Company, in this instance, means the electric combination consisting of the Thomson Houston, Edison, Brush, Fort Wayne, and one or two others. It is probable the lights will be apportioned among the different members. World's Fair people are not interested in that feature, but are delighted at their success in causing the combination to drop $1,200,000 on its first bid. The matter has been engineered by Directors Schwab and Clowry of the Committee on Grounds and Buildings, and Electrical Engineer Sargent. The only unfortunate thing about the arrangement is that the South Side Machine and Metal Works Company, by means of which prices were lowered, will be given no part of the contract for furnishing the lamps. The Westinghouse people were also instrumental in lowering the prices. They will get no part of the work unless the combination pleases. This contract is in addition to the arc light contract placed some time since.

Railroads Make no Concessions.

New arrangements have been perfected by the Joint Committee of the Central Traffic and Trunk Line Associations regarding the transportation of articles to be exhibited and the return of such exhibits. The new rates and rules are no more favorable than those heretofore promulgated, and will no doubt meet with considerable opposition from the World's Fair people and exhibitors. None of the concessions demanded have been granted, and it looks as if the railroads were determined to make all the money they can out of the exposition.

The rules governing the transportation of articles for the exposition are as follows:

1. (*a*) All articles forwarded for exhibition at the exposition should be billed thereto, and will be charged full Chicago tariff rates to the junctions of the Chicago lines with the exposition tracks of the Illinois Central and Baltimore and Ohio railroad companies. (*b*) In addition to said rate exhibits will incur terminal charges, which will include the switching service of the Illinois Central and Baltimore and Ohio railroad companies from those junctions to the exposition grounds and the charges of the exposition management for placing exhibits at allotted points. (*c*) Exhibits unsold and entitled to free return will be subject to charges for transfer to steamers at seaboard cities, and for deliveries at points other than the regular seaboard terminal stations of the trunk lines. (*d*) Prepayment of the aforesaid freight and terminal charges will be required at points of origin. (*e*) Prepayment will be required at Chicago of the terminal charges stated in above clause (*b*) on all exhibited articles which are returned free or otherwise, and also of the seaboard charges stated in above clause (*c*), when incurred by articles returned free. (*f*) Bills of lading must show the precise routes by which exhibits are to be transported, specifying, in detail, every carrier from starting points to the exposition, in order that exhibited articles may be returnd by the exact routes first used (*g*) Detained cars carrying exhibits will be subject to such demurrage as may be hereafter determined and announced.

2. Horses and other valuable and fancy animals, including cattle, hogs and sheep, intended for exhibition will be charged tariff rates in both directions, and the rules of the official classification, relating to the free carriage of attendants in charge of animals, will apply thereto.

3. With the exceptions noted in the next above clause and subject to the conditions hereof and of the official classification, articles which have been exhibited will be returned free, from the first mentioned Chicago junctions with the Illinois Central and Baltimore and Ohio railroad companies, over the railways in the territory of the Joint Committee, only on the following terms and conditions: (*a*) Paid freight bills, which should show the precise route first used, or original bills of lading giving the same information, and certificates signed by the proper officer of the exposition, must be presented to show that the articles paid freight one way, have been exhibited and have not changed ownership. (*b*) They must be tendered at designated stations in Chicago to the railroad or route which brought them to Chicago. (*c*) They must be consigned to the points from which they were sent on the forward journey and over the same routes first used. (*d*) Releases must be executed relieving the carriers from liability on the return journey in consideration of free return. Note.—The unform release to be used is set forth in Joint Committee circular No. 1396, issued March 14, 1892. (*e*) No charges will be advanced on articles returned free. (*f*) Persons accompanying exhibits returned free will be charged fare.

"This matter of transportation is one that few men understand," said a prominent railroad official. "I fully believe that no better rates can be obtained than have already been granted by the roads. The trouble is that some little road of no importance agrees to carry freight for half rates each way, or perhaps for nothing, and then some one immediately jumps at the conclusion that all other roads should be compelled to do the same thing. A road that will not haul more than 100 tons of freight can afford to do the work for nothing. But a road that will haul hundreds of thousands of tons of freight cannot do that. There are 800 transportation lines in the United States that have been asked to make rates. Of these 438 have given a half rate on the round trip. In other words, these roads charge full rates on goods being shipped to the fair, but will return the goods to the point from which they were shipped for nothing. About 45 lines have given a half rate each way, and 39 roads have promised to bring and return exhibits free of charge. The steamship lines between ports on our shores and Central and South American ports will charge a half rate each way. The Transatlantic lines will do about the same thing, so that foreign exhibitors will be well cared for. Of the 15 freight associations represented in the Central Traffic Association ten will charge full rates on goods sent to the fair and will return the same free. These ten roads, however, make an exception of fine horses and fancy animals. The other five roads make no exceptions. To obtain these concessions much hard work has been done, and no person can blame the railroad managers for refusing to reopen the discussion concerning rates."

The Ohio Building.

Commissioner Ritchie of Lima, Ohio, will supervise the construction of the Ohio building, for which the ground will be broken next week. The building will face south and will be situated just west of the Art Galleries and north of the Wisconsin Buildings. It will be 100 x 80 feet in size, and though not the largest, will be one of the most beautiful State structures on the grounds. Its architecture is of the ancient colonial style and will do credit to the creator of the design, James W. McLaughlin. The Ohio Building will be erected entirely of American materials and by American mechanics. The tin plate for the roof is now being made in Piqua, in the factory where the first plates were dipped by Governor McKinley during his campaign last summer.

The Connecticut Building.

The design chosen for the Connecticut building at the World's Fair is in striking contrast with the edifice at the Philadelphia Exposition. This was in the general style of an ancient farmhouse, with the roof sloping nearly to the ground. The Chicago building is modeled after the mansion houses of the wealthy men of the colonial days—the magnates and rulers of that period. Half a dozen designs were submitted, and W. R. Briggs, a Bridgeport architect, won the prize. It will be two stories high, with colonial pitch roof, surmounted by a small balcony or "deck," such as was commonly built on the houses of merchants at the seaports, and from which they watched the movements of their vessels. Such roofs yet exist in New Haven and New London; at Nantucket, on the Massachusetts coast, there are dozens of them. Broad verandas stretch around the building on three sides, and the massive porch has four fluted columns.

Items.

The Joint Committee on Mines and Mining, appointed by the National Commission and the Board of Directors, have decided to visit the mining States and Territories. The trip will be made, starting from Chicago May 10, and will be for the purpose of working up interest in the mining exhibit. It is intended by the committee to take in the Western Pacific States in summer, and during that trip it will be decided as to what date shall be fixed upon for the starting to the Southern and Eastern mining sections of the country. The committee will bear its own expenses, and the trip will not cost the local or national organizations a dollar.

Negotiations are about closed for railroad entrances to Jackson Park, at the southeast corner. This, when accomplished, will make two railroad entrances at the south end, and the Illinois Central running along the entire west side will discharge its passengers principally at the north end, which will be the same as a railroad entrance; so that World's Fair directors think that they have solved the problem of getting people into the park.

The exposition management decided to begin charging an admission fee of 25 cents to Jackson Park on April 18. All passes will be taken up.

The Committee on Ways and Means failed to close a contract with any of the six firms bidding for the construction and operation of an intramural railroad in Jackson Park. This important matter was postponed until after a conference could be had with the Committee on Grounds and Buildings. The committee, it seems, is inclined to favor at present the Western dummy system. This company proposes to run elevated trains operated by electricity. It will carry from 8000 to 12,000 passengers per hour.

The contract for architectural and ornamental iron work on the Fine Arts Building was awarded by the committee to the lowest bidder, Winslow Bros. Company of Chicago, for the sum of $23,500. The iron work will be done according to designs furnished by the architects, and will be one of the features of the building.

George S. Morison of Chicago, the engineer, has evolved a new plan for the construction of a tall tower on the exposition grounds. It is not improbable that the structure may be put up. Its design has been approved by the Construction Department. It will be 1000 feet high, and of the simplest character of iron and steel construction. Mr. Morison is reported to have back of him Andrew Carnegie. The plan for a tall tower has had many ups and downs, but Mr. Morison thinks he has a scheme now which will go through.

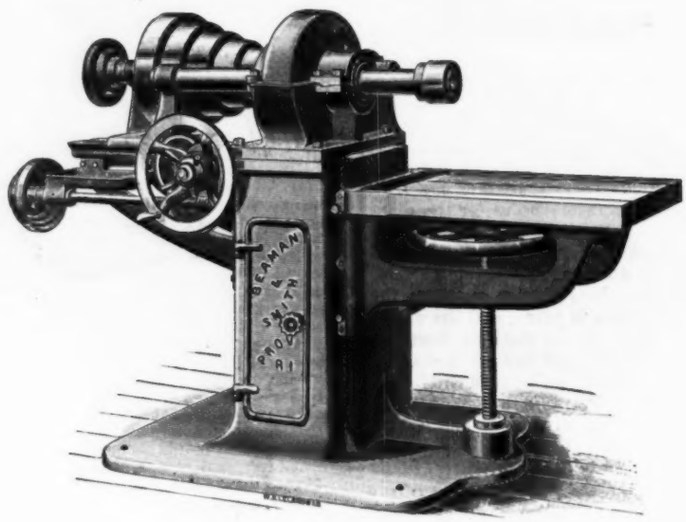
On Monday of last week the National Commission closed its sixth session and adjourned to meet October 5. Director-General Davis was authorized to alter the classification by grouping certain manufactures in one collective exhibit; this is to be done only in special cases, and subject to the approval of the Board of Control. The Sunday closing question came up before the commission, and further consideration of the subject was posponed until the second day of the next session, which will be October 6. At that time a hearing will be given petitioners.

Information was received from the Secretary of the Society of Arts that the British Government has increased its World's Fair grant $300,000, enabling the commission to allot space free of charge. The original appropriation by Parliament was $125,000. This the commission thought wholly in adequate, and determined to charge for space. Owing to the numerous protests from intending exhibitors, and the fact that Japan had appropriated $630,000, Germany something like that amount, and France $640,000, Parliament woke up and appropriated the additional sum.

The Standard Drilling and Boring Machine.

The Standard machine is intended for drilling, boring and tapping a great variety of work for which a much more expensive tool would ordinarily be required. When desired, it can be furnished with an outer bearing for boring bars, and with a cross table provided with longitudinal traverse.

The standard has shelves cast in, making a convenient receptacle for tools, &c. It is provided with a large flange at the bottom which is 3 feet x 4 feet, thus insuring a firm floor bearing. The knee or platen is 20 inches wide and 32 inches loug, has 3 tee slots, is well braced. It is supported by elevating screw 1¼ inches in diameter, which is placed well out from the standard, with an 18-inch hand wheel for adjustment. The bearing is 16 inches long, is gibbed and provided with binders for ridged fastening. The least distance from the top of the table to the center of the spindle is 2 inches, the greatest 24 inches. The spindle is 3 inches in diameter, has taper hole for tools, bars or sockets, and a driving slot across the end. It has an 18-inch movement by hand or power and is driven by a 3-inch belt on a five-section cone 6 inches to 16 inches in diameter, is geared direct 3 to 1, and back geared 24 to 1, which gives 10 speeds from 2½ to 160 revolutions per minute. The gearing is protected by shields. The spindle quill has long conical ends running in taper boxes of hard bronze, with take-up for wear. The automatic feeds are 120, 80, 40, and 13½ revolutions of spindle to 1 inch of feed. It is manufactured by Beaman & Smith, Providence, R. I.



THE STANDARD DRILLING AND BORING MACHINE.

An electric welded projectile, manufactured at Lynn, Mass., was successfully tested at the naval proving ground at Indian Head, on the Potomac. Two plates, one of which was a 2½ inch steel deck plate and the other a 3-inch iron armor plate, were penetrated by the missiles from a 4-inch rapid-fire gun.

The Cumberland Steel and Tin Plate Company, recently organized to manufacture tin plate at Cumberland, Md., will start up in the near future with a two-mill tin plate plant having a capacity of 1000 to 1200 boxes per week. The company has purchased the works of the Crown and Cumberland Steel Company, at which place the tin-plate plant will be erected and run in connection with the steel plant, all under one management. The capital stock of the company is $300,000, in addition to an issue of mortgage bonds of $75,000, all of which has been subscribed for. The officers are: J. W. Humbird, president; W. C. Dickey, vice-president; T. A. Hicks, secretary; W. C. Louchheim, treasurer, and J. E. Jones, superintendent, who constitute the board of directors.

A press dispatch states that the Milwaukee, Lake Shore and Western Railroad has already started ore trains from the Gogebic range. The outlook in the iron ore trade is quite different here than at Cleveland, the iron ore center of the country. Mine managers state quietly that they expect shipments of 2,000,000 tons from Ashland this season, as against 1,250,000 tons last year. The only explanation is that large blocks of ore have been sold of which the public know nothing as yet. The feeling here is that the Gogebic mines, many of which are controlled by the railroads, will push matters wherever there is a chance of profit. The whole effort now is to force lake rates down, so as to increase that margin. All this is gleaned after a most painstaking investigation among the mines.

Three twin-screw steamships will be built in England for the fruit trade between Honduras and Boston.

The engineers' strike in England, which has prostrated many industries and filled the Tyne and Wear with idle vessels, has lasted nine weeks. It started with a trumpery dispute, whether a certain class of work should be given to engineers or to plumbers. It is officially stated that this very work had been refused no long time ago by the engineers as too trivial. The arbitration court gave it to the plumbers, and the engineers struck against the arbitrators' decision. That is but one of many instances in which English workingmen have refused to abide by decisions to which they stood pledged in advance. Not less than 20,000 men are absent from work on this account. Not less than 200,000 altogether are out, counting the miners in Durham and Cleveland.

The Bryant Metal Sawing Machine.

The Q and C Company, whose offices are in the Phenix Building, Chicago, and at 29 Broadway, New York, are manufacturing the Bryant metal sawing machine, which is meeting with much favor, although it has but recently been put upon the market. This machine is made either in portable form or to be used with power. Fig. 1 is a representation of the portable machine, shown in the act of sawing a rail. This machine is adjustable to cut on any angle, from 90° to 45°, right or left, without removing the saw from the rail, and will cut any size of rails.

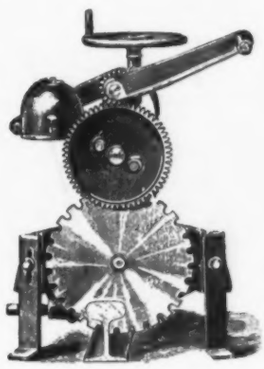


Fig. 1.—Bryant Portable Metal Sawing Machine.

Fig. 3.—Gearing of Bryant Metal Sawing Machine.

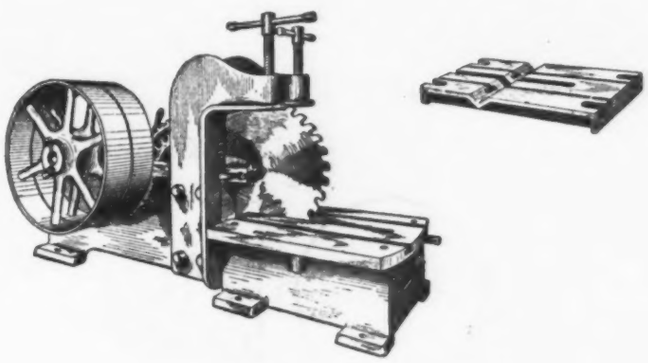


Fig. 2.—Bryant Power Metal Sawing Machine.

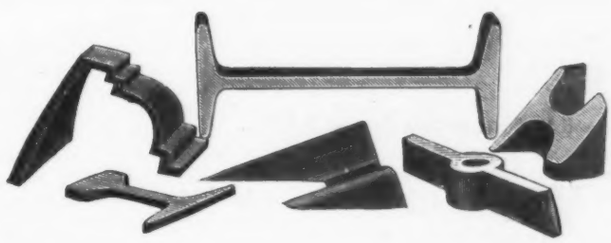


Fig. 4.—Specimens of Work Done by Bryant Metal Sawing Machine.

Fig. 2 shows the power machine, which is adapted for all kinds of work, of any shape or form. The mechanism of the machine is simple, as will be seen in Fig. 3, which illustrates the principle of transmitting the power to the periphery of the saw blade. The motive power applied is utilized to its fullest extent, and hence but a limited amount of power is required to operate it. The construction of the saw is such that each tooth acts as a planing cutter, leaving the work perfectly true and smooth, and, the inventor claims, without disturbing the temper of the metal.

The portable saw simply requires space for two men to work it by means of the cranks shown. It will cut a rail in less than ten minutes. Records show a 60-pound rail cut in three minutes, a 95-pound rail in three minutes and twenty-five seconds, and a 72-pound rail to 35° angle in seven minutes. The power saw requires 2 feet by 6 feet of space and takes but 1 horse-power to do its heaviest work. It will cut a 15-inch beam in six minutes and records have been made of a 9-inch shaft cut in 13 minutes, and a 15 inch beam in less than four minutes.

Fig. 4 is reproduced from an actual photograph of a number of samples of cuttings done with these saws, indicating their applicability to the use of steam or street railroads, bridge builders, structural iron works, rolling mills, shafting works, foundries, &c.

The Queen and Crescent Route has issued Tariff No. 4, effective April 7, giving rates on iron and its products (except pig) from Anniston, Bessemer, Irondale, Birmingham and Gate City, Ala., and Chattanooga, Tenn., to all points.

Plans for the establishment of the block system on the New York Central Railroad have been completed. The mechanical appliances required will involve much labor.

Measurement of Ropes.

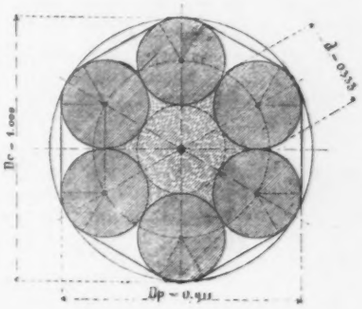
Circumference vs. Diameter.

For the following measurement of ropes we are indebted to A. S. Hallidie, president of the California Wire Works of San Francisco, Cal.:

A custom has obtained of measuring ropes by their diameters, and the consequence has been that many disputes have arisen between the seller and buyer, regarding the actual size of such ropes.

The custom that has generally prevailed heretofore has been to measure ropes by their circumference, and this custom is still in use where ordinary technical or business accuracy is required, and no other way of measuring a rope can be relied on for accuracy and fairness. This applies equally to all kinds of ropes, whether three, four or six stranded.

Take, for example, a rope made of six strands; its section is as shown in the annexed diagram, and there being no accepted rule as to where the diameter shall be measured, it may be taken at any part of the circumference of the hexagon formed by the six strands.



d = diameter of strand
Dc = diameter of circle
Dp = diameter between hexagon sides
C = circular circumference
Cp = hexagonal circumference
Dc = 3 d = 1.000
Dp = 2.732 d = 0.911
$d = \frac{D c}{3} = 0.333$
Cp = 9.14 d = 3.046
C = 3.14 = 3.1416
C = 1.031 Cp
Cp = 0.97 C

Now what constitutes a 1-inch rope when measured by diameter? Is it 1 inch measured on a line cutting the axis of two opposite strands, or is it measured on a line cutting midway on the faces of the hexagon, or is it any point between? There can be no dispute as to this method of measurement applied to a round bar of iron, but modify the circle to suit the conditions of a six-strand rope (nearly all wire ropes are thus made), and the trouble begins. The measurement on line "Dc" is 1 inch, but on line "Dp" it is only 0.911 inches; hence there is a cause for dispute that would not exist if the circumference was taken as the measure, instead of the diameter.

But even in measuring the circumference of a rope there is a possibility of unfairness in the absence of a defined method of measurement, although this possibility is much reduced. Such ship chandlers and hardwaremen as are required to sell rope by circumference are very apt to take a piece of rope yarn and wrap it around the rope, and cut across the overlapping parts; but a mining or cable railway superintendent requires a more accurate way of measuring, and will take a piece of twine.

Better than either is a piece of ordinary writing paper about ¼ inch wide, which is wrapped around the rope and cut off at the overlap with a sharp knife. This will give the circumference measured on the

faces of the hexagon and determine exactly the size of the rope.

A careful consideration of the question will show this advantage in measuring rope this way; each division of space of the circumference is three times that of the diameter; hence the circumference is three times as accurate, and in every way, both as to fairness, accuracy and simplicity, is to be preferred. The diagram shown herewith will graphically explain my contention.

The Wellman Boiler.

For some time past the Wellman Iron and Steel Company of Thurlow, Pa., have running in their No. 2 boiler house a battery of boilers designed by S. T. Wellman which embody novel features, and, using a cheap coal, have proven very economical. As will be noted from the accompanying engravings, the notable point in the design of the boiler is the fact that it has a detached fire box and that the products of combustion pass simply through the flues to the stack. The direct tubular boilers are each 90 inches diameter of shell and 15 feet long, and contain 266 flues 2½ inches in diameter. The area of heating surface is 2300 square feet, while the grate surface is 64 square feet, the area through the tubes being 7⅛ square feet. The ratio of the heating to grate surface is, therefore, 36 to 1, while the ratio of grate surface to tube area is 8½ to 1. The boilers use forced draft at 1 ounce pressure supplied by a Sturtevant blower. As will be seen from the drawings, the air is forced through underground flues up through the side walls of the furnaces over the roof and front, being thus slightly heated. It then

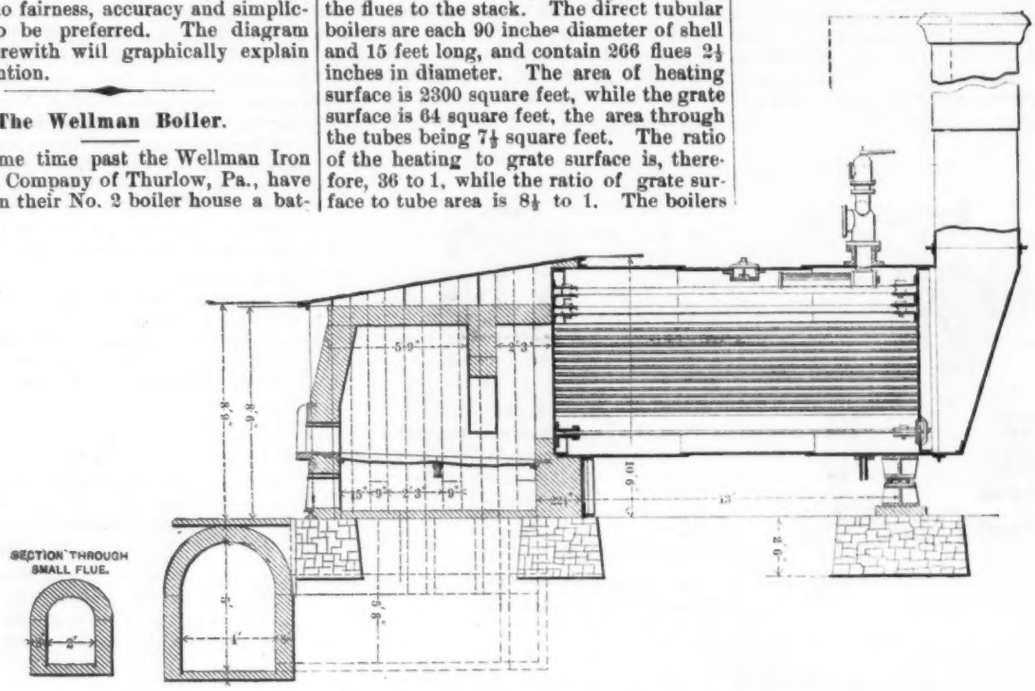


Fig. 1.—Vertical Section.

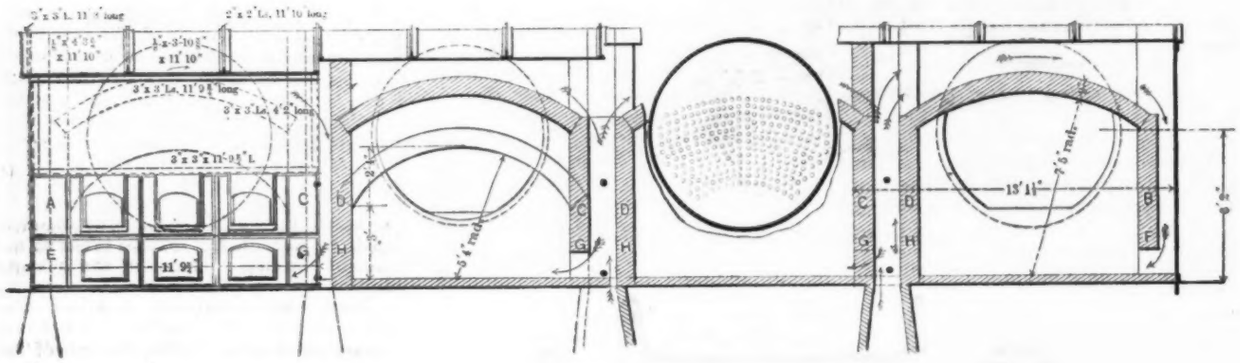


Fig. 2.—Elevation and Vertical Sections through A B C D.

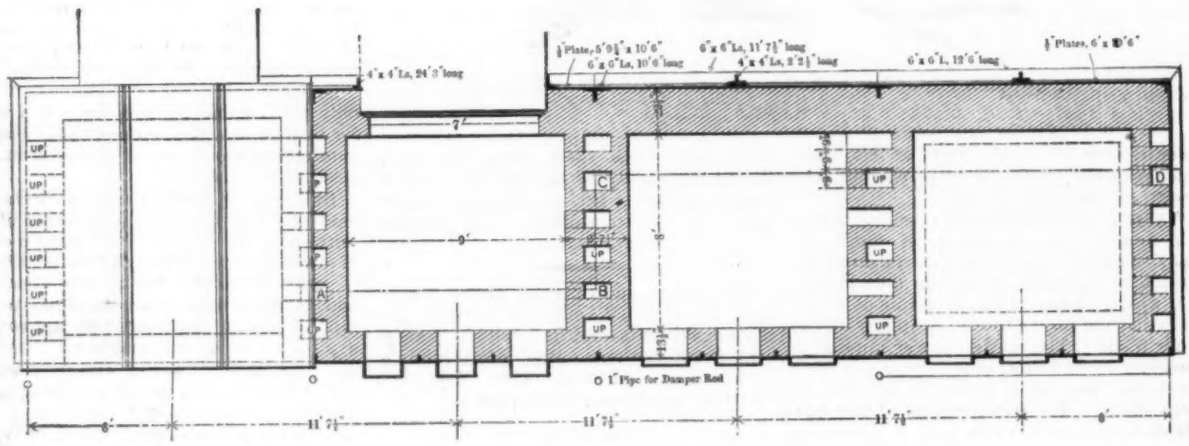


Fig. 3.—Plan and Horizontal Sections.

THE WELLMAN BOILER.

passes to the ash pit and under the grates. One result of this method is that the front is kept quite cool. In February a number of tests were made on No. 4 boiler with results tabulated below:

Test of Wellman Boiler.

Coal used in all tests.	No. 1.	No. 2.	No. 3.	Totals and averages.
	Anthracite rice.			
Duration of test, hours	124.25	72 5	58	254.75
Coal consumed, lbs.	100,468	59,305	49,695	209,468
Water evaporated, lbs.	832,490	471,410	391,170	1,695,070
Coal per hour, lbs.	808.6	818	857	828
Coal per hour per square foot grate, lbs.	12.6	12.8	13.4	12.9
Water per hour, lbs.	6,700	6,503	6,744	6,649
Water per hour per square foot heating surface	2.9	2.8	2.9	2.9
Average water per hour during day turns	7,702	7,407	7,880	7,693
Average boiler pressure, lbs.	85	95	100	93
Average temperature of feed water	119.4°	129°	125°	124.5°
Average temperature of escaping gases	325°	425°	480°	410°
Number of times of cleaning fires	28	14	12	54
Water per pound of coal, lbs.	8.28	7.94	7.87	8.03
Water per pound of coal from and at 212°, lbs.	9.36	8.89	8.89	9.05

With ordinary rice anthracite coal as a fuel these results are certainly very flattering. The boiler is simple, quickly and easily set, and the cost per horse-power is very low

A simple method has been adopted for cleaning it. A steam jet has been arranged for each stack. Once a day steam is blown into the stack, which carries off all the dust which may have settled in the flues.

THE WEEK.

Governor Flower signed an act creating a Department of Buildings in New York City. The new department is authorized to do things now done by the Fire Department, the Building Inspection Bureau and the Board of Health, so far as the latter controls regulation of light, plumbing and drainage.

The Academy of Natural Sciences in Philadelphia contemplates the erection of a building in the near future to cost $150,000.

The exceedingly valuable accumulation of ivory in Emin Pasha's possession, which Stanley hoped to secure, and which is supposed to have been the real object of his expedition, will probably soon be put on the market and make its owner the richest man in Africa.

A special committee appointed by Congress reports that the Treasury vaults at the National Capital are all insecure, and should be replaced with new ones of the most approved construction.

In Cuba, under the operation of the new treaty with the United States, American flour has almost wholly superseded importations from Spain.

Steam power is being gradually introduced into the sugar mills in the Barbadoes, but the island is still well studded with windmills, which enliven the landscape.

The grain fleet on its way from Chicago to Buffalo this spring will deliver 6,000,000 bushels, and 3,000,000 bushels from Duluth will soon follow.

The value of silver in Mexico has depreciated nearly 45 per cent., as stated by an American tourist just returned. The American silver dollar, though but a few grains heavier than the Mexican dollar, sold for $1.40. The prices of goods are not affected yet.

At the annual meeting of the Cleveland Board of Trade last week President William Edwards stated that 40,000 laboring men are employed in that city, and over $40,000,000 of capital is invested. The shipbuilding establishments of Cleveland were conceded to be second to none in the United States, exclusive of the Government yards.

Exports of corn from Philadelphia from January 1 to April 12 were approximately 12,000,000 bushels, or 9,250,000 bushels more than for the whole of last year. Grain men have had the benefit of the rivalry between the Reading and the Pennsylvania railroad systems, and a competitive basis for business has been established that had been lacking in recent years.

San Francisco capitalists have combined to build a railroad between that city and Salt Lake to compete with the Central Pacific, and engineers are making the surveys.

It is reported that Jay Gould intends to build a third railway bridge at St. Louis.

Italy is pacified by the receipt of $25,000 indemnity for the three victims of a riot in New Orleans and diplomatic relations are restored.

Under the provisions of a bill which has received the signature of Governor Flower hotel proprietors in this State cannot be held responsible for money or valuables deposited at the hotel offices in excess of $250.

Thousands of immigrants are passing through St. Paul, bound to western Minnesota, North Dakota, Montana and other parts of the Northwest. Prospects in that section are said to be brighter than for many years. Canada furnishes a good many of the new settlers, but the largest number come from Michigan, Wisconsin, Iowa and Missouri. In addition to these, there is a large number of foreigners, coming mainly from Scandinavia and Great Britain.

The population of St. Louis, as indicated by the new city directory, is 542,922, which is an increase of nearly 77,000 as compared with the Government census taken a year and seven months ago.

April in California opened with an increased acreage of land under culture and large anticipated yields.

London laborers are in rebellion against unloading machines at the docks and other labor-saving devices.

Southern pine lumber at St. Louis will be advanced 50 cents per 1000 feet after May 1.

Germany, after long-continued efforts, has at last succeeded in the attempt to coerce the Government of San Domingo into granting to her the same commercial privileges as those enjoyed by the United States.

Nearly 2500 German immigrants were landed at Baltimore from one steamer last week.

The choicest accommodations on nearly all of the first-class European steamers from New York are already engaged for May and June. The tide of travel is reported to be much stronger than it was a year ago.

The Senate Committee on Foreign Relations has wisely reported the Dolph bill extending the present Chinese Exclusion act for another ten years, as a substitute for the Geary bill, which passed the House last week by the extraordinary vote of 179 to 43. It is conceded that the existing law is sufficiently drastic to satisfy all reasonable demands for protection from would-be intruders.

An order just issued from the British War Office substitutes swords of a new pattern for the weapons which have been carried by officers since the days of the Iron Duke. In the new sword the blade is perfectly straight, its haft being set in a roomy hilt, squared to give play to the wrist in guarding and thrusting. Only about 10 inches of the edge from the point and 6 inches of the back are sharpened, the rest of the blade being blunt and rounded for parrying purposes, and having, therefore, no cutting capacity whatsoever.

The shipping tonnage for the first quarter of 1892 at San Francisco shows an increase this year of 34,000 tons from Europe and 7000 tons from domestic Atlantic ports, compared with the same time last year.

Cargoes at the lake ports are handled with remarkable celerity by improved dock machinery. Not long ago a vessel loaded 2000 tons of iron ore and steamed away from the dock, at Escanaba, in 45 minutes after being placed under the chutes.

The new Bombay water works, just completed after seven years' labor, are regarded as a triumph of engineering skill. The waterspread is about 7 miles and the catchment area 52 square miles. The dam itself is 2 miles long, and the water from the reservoir is conveyed to Bombay through 61 miles of tunneling, ducts and mains. The new works are capable of supplying 31,000,000 gallons daily and cost about 15,000,000 rupees.

A London dispatch attributes some importance to the speech of Sir Michael Hicks Beach, delivered before the Bristol Chamber of Commerce, in which he speaks of real ground for a gloomy trade outlook for the coming year. The continued decrease of British exports causes much concern. The explanation given by Mr. Beach is the "want of confidence in foreign countries and the terrible Baring crisis," which may be taken to mean the demoralized financial condition of markets in South America. Brazil, Venezuela, Chili and Peru are all disturbed and there are portentious rumbles in other quarters.

Sugar machinery in Cuba is undergoing a radical change in consequence of improved manufacturing processes.

Whitelaw Reid, the American Minister to France, was given an honorary banquet by the New York Chamber of Commerce and his official work highly commended.

Trade in Venezuela is paralyzed by a rebellion which already numbers 200 victims.

The city of Birmingham, in England, contemplates new water works which will cost $25,000,000.

When the war vessels now in course of construction are completed the United States will stand seventh in the list of naval powers, according to the estimate of the House Naval Committee.

Mortgage indebtedness in Kansas is being reduced at the rate of $1,000,000 a month.

To secure direct cable and overland lines between the western coast of South America and Europe several companies have combined to build a line from Valparaiso to Buenos Ayres, and the materials are being shipped from England.

Vessel owners on the lakes are about to consolidate as an organized association to look after legislation, fix wages and establish shipping offices at all principal cities.

The Iron Age

New York, Thursday, April 21, 1892.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - HARDWARE EDITOR.
JOHN S. KING, - - - - BUSINESS MANAGER.

Lake Superior Charcoal Iron.

The time is ripe for the manufacturers of Lake Superior charcoal pig iron to get a better price for their product. They have been floundering in the depths of depression for many weary months, waiting for an improvement to be brought about by the natural course of events, and from present appearances are likely to put in some more miserable months unless they decide to take a hand in shaping the market. Furnace after furnace has blown out without causing a ripple of improvement, and more furnaces are to be blown out as soon as their present stocks of ore and fuel are exhausted. Production has thus been restricted and will be still further curtailed. The trade has certainly been brought into a better position to be controlled than for years past. The number of active producers is now limited. Larger stocks are held by the furnacemen, it is true, but they are in strong hands and do not need to be sacrificed. Some resolution, a little firmness, a stiffening of the vertebræ, seems to be what is needed to secure better prices.

The season is rapidly approaching for the renewal of contracts by heavy consumers. Indications point to the appearance of these buyers in the market some what earlier than usual. Purchases have recently been made by some of them which are evidently intended to enable the buyers to run a little longer before they again cover their requirements for the coming trade year. It has been the policy of many of them to enter the market almost simultaneously, as though they had an understanding on the subject. The furnacemen have then been apparently frightened by the appearance of the buyers, and instead of adhering firmly to a good stiff price they have hurriedly closed at concessions and patted themselves on the back to think that they had so nicely gotten rid of a product so difficult to sell as charcoal pig iron. Its use is so limited, and the number of purchasers are so few, that the makers seem to esteem themselves lucky when they are able to dispose of their entire output at barely cost price.

Is it not possible that the charcoal ironmen take too pessimistic a view of their own business? If they were, as a body, disposed to value their product at its true worth, would they not stand a better chance of impressing their belief on the consumer and getting a better price out of him? Timidity seems to be the fatal weakness of the charcoal furnacemen. They have been told for years that the use of charcoal iron for making car wheels is steadily decreasing, that the malleable iron makers were learning how to use a larger percentage of coke iron, that as strong castings can be made of coke iron as of charcoal, that steel castings were taking the place of the highest grade of iron castings, and they have accordingly been educated to the possibility of their industry going to decay. If this is to be the case, they will not prolong its life for any considerable time by selling their product at cost or below it. The heavy stocks of pig iron carried at the furnaces show that the reductions in price which have been made have not led to increased consumption. Further reductions in price would not help the situation, unless charcoal iron were to be sold in direct competition with coke iron, which is, of course, not to be expected.

If the furnacemen are not disposed to act with some degree of harmony this spring, the course of prices as shown in the past will be repeated. June will again see lower prices than April. Before negotiations are ended $16.50 at Chicago will seem a high figure. To avoid such a contingency, which would mean heavy losses to producers, they should by all means endeavor to hold their ground and if possible get better prices than those prevailing at this time.

There are occasions when combinations or agreements among producers seem to be justified. A manufacturer is entitled to a fair return on his investment, and if the business in which he is engaged is unduly depressed he should not be condemned if he decides to act in harmony with his fellow manufacturers to secure a reasonable profit. On the contrary, he is really justified if it happens that those who use his product as their raw material are enjoying the sweets of prosperity. This is true of the consumers of charcoal pig iron. The car-wheel makers may not be quite so busy as they would like to be, but their condition is decidedly better than that of the charcoal iron producers, while the manufacturers of malleable castings and of agricultural implements were never so driven in all their experience as they have been this year. An advance of $1 or $2 per ton on charcoal pig iron would mean comparatively little to them, but it would be a great deal to the suffering furnacemen. Will they have the courage to ask it?

The machinery interests of Chicago have become so thoroughly established in a particular section of the city that very few dealers are now found outside of it. The district is located on the west side of the city and covers about sixteen blocks or squares, extending from Canal street on the East to Jefferson on the West, and from Fulton on the North to Madison on the South. Within these limits the machinery houses and allied interests have absorbed almost the entire space. The manufacturers found here are either machinists or workers in metals of some character, so that there is some harmony of interest even in that respect. The movement toward the establishment of such a center has been very pronounced within the past three or four years, and has of late been so remarkable that it attracts general attention. Some of the machinery depots in this district are of large extent and are handsomely fitted up, a few of them claiming to be the best of their kind in the country. Complete machine shops could be fitted out in this district in short order with everything needed, from engine to emery wheel. It is extremely doubtful if another district of equal size and importance in this branch of trade could be found on this side of the Atlantic.

The Proposed Southern Consolidation.

The success of the consolidation of the Tennessee Coal, Iron and Railroad Company and of the De Bardeleben Coal and Iron Company has led to an even more ambitious project. Negotiations have been pending recently for the sale to the Tennessee company of the plant and properties of the Pioneer Mfg. Company and of the Woodward Iron Company. It is proposed to include also in the new organization some of the coal mining concerns of the Birmingham district, which would place in the hands of one powerful corporation the control of by far the larger part of the Birmingham iron and coal district. Some conception of the magnitude of the concern, should the negotiations go through, may be obtained from the fact that with the furnaces now built it would be easily able to make 650,000 gross tons of pig iron annually; in fact, the plants enumerated did during the second half of 1891 actually make 314,285 gross tons, without running quite full. That men, in whose hands the marketing of such an enormous quantity of pig iron would rest, would possess a very great power in the pig-iron markets of the whole country goes without saying. So far as foundry and forge grades are concerned, they would represent a very large proportion of the whole product of the country. Situated so that they would be sellers in all the leading distributing centers of the United States, their action would go far toward swaying values.

Such a concern could face, too, the most serious problem which is now before the Southern iron makers. Its gravity is, we know, appreciated by some of the leading spirits, but has not yet dawned upon the multitude of writers who see in the progress of Southern iron manufacture the manifest destiny of the older districts of the country. With few exceptions the Birmingham iron makers produce a very large proportion of forge and lower grades of iron. For these they have only two outlets, the manufacture of cast-iron pipe and the puddling mills. The consumption of the latter has fallen off in an extraordinary manner, for reasons we have repeatedly explained very fully. With the market for their principal product shrinking, they must turn to steel making as an outlet for their crude metal. A great consolidation might attempt this problem, backed by large resources, which

the individual companies cannot attack. To the trade at large this would be the most interesting contingency growing out of the negotiations now going on.

The Steel Rail Trade.

While the burden of complaint in nearly all branches of the iron and steel trades is that prices are abnormally low, the volume of business being quite good, the rail makers are enjoying remunerative figures on their sales, but are disappointed in the amount of work coming forward. It is possible that one fact may make this seem worse than it really is. The railroad companies know that there is no prospect of an advance, and that the only contingency which may happen is that prices may be lowered. They are aware of the fact that capacity is ample to meet what requirements may come forward. They have fallen into the habit, therefore, of ordering only for immediate wants. Where formerly even smaller lines took all the material for a whole year's renewals in one contract, they now often enter the market month after month. The aggregate tonnage may not differ, but it naturally makes quite a different impression upon the seller.

Still, the tonnage of steel rails thus far ordered this year is a little better than it was last year. The official report shows that up to April 1 the mills in the Association had taken for 1892 delivery orders for standard sections footing up to 694,362 gross tons, against 529,588 for the first quarter of 1891, an increase, therefore, of about 165,000 tons. But the deliveries have been 296,553 tons this year, while last year, owing to the stoppage of the Western mills, they were only about 175,000 tons. The unfilled orders are consequently a little larger than they were last year. The two great Western works —the Edgar Thomson and the Illinois— had booked orders up to April 1 of about 408,000 tons. Since their percentage in the pool is about 57 per cent., they are relatively better off than the Eastern concerns, counting the Cambria with the latter. Another point should be noted so far as the Eastern works are concerned. In order to keep their works going during the last few months of 1891, at least some of them rolled rails for 1892 delivery, and these reduced the amount of business to be expected this year. In one case at least 30,000 tons were thus made in anticipation of this year's deliveries.

On the whole the situation is fair, but of course it is far from coming up to the sanguine expectations of last year. It looks now as though 1892 would go into the annals of the rail trade as one of the lean years.

Gen. Von Tillo, who has made the latest determinations of ocean depths, fixes the mean depth of all the oceans at 3803 meters, or about 12,700 feet less than 2½ miles The Pacific Ocean averages about 1100 feet deeper than the Atlantic. The North Atlantic is deeper than the Southern Atlantic, and the Arctic Ocean grows shallow the nearer the pole is approached.

The Grant Memorial.

The monument to General Grant, of which we present an illustration, is to be erected over his grave, in Riverside Park, a short distance from the drive. It is most easily reached by the Sixth Avenue Elevated Railroad to 125th street, thence retracing steps and going westward to 122d street and Riverside avenue. General Grant was buried there on August 8, 1885, permission having been granted both by the Legislature and the city authorities. A temporary structure was erected over the tomb, which it was not expected would remain longer than for a few months. From the fact that the park is a part of the city little known except to those who dwell in its vicinity, or who do much driving, few persons are aware where the exact locality of his tomb is, although no inquiry is more often made by strangers from other towns. Very shortly after his death meetings were held looking to the erection of a monument, but though the committee then appointed has been continued till within a month or two, very little was accomplished by it. Less than a third of the sum total was contributed. Out of this much was spent for salaries and printing. But this committee has recently been reorganized. It is much smaller, and contains none but active men. Gen. Horace Porter, long associated with General Grant, has abandoned his private business and will not resume it until the monument is assured and the money subscribed. He receives no compensation for this, nor do any other members of the committee. The total cost will be about $500,000, leaving $350,000 still to be procured. Appeals have been issued to every calling and occupation in New York, lawyers, doctors, merchants, bankers and manufacturers, It is believed that on April 27, when the cornerstone of the edifice is to be laid, a very large proportion of the whole amount will have been raised.

The memorial will be of light granite, about 100 feet square and 150 feet high. It will be on high ground, the base being about 150 feet above the level of the sea, which will put the pinnacle of the monument 300 feet higher than the Hudson. It will be high enough and large enough to be seen from the Palisades, the towers of the Brooklyn Bridge, all high grounds within ten miles of the park and every vessel that sails up and down the river. Three millions of dollars has been spent by the city in its work of decorating this pleasure ground. The foundations for the monument are now finished and the first course of granite, 10 feet in hight, has been put under construction. On April 27 the President of the United States will lay the cornerstone, Chauncey M. Depew will deliver an oration, and it is believed a greater number of representative men, Senators, Judges, members of the Cabinet, members of Congress and surviving Generals of the war will be brought together than on any previous occasion. In the evening there will be a banquet at Delmonico's.

The Committee of Architects, of which Richard M. Hunt is the head, are agreed that when completed this monument will be in every sense worthy of America.

The Accepted Design for the Tomb of General Grant.

A bulletin just issued by the Census Bureau contains some very significant figures, as bearing upon the remarkable changes that are taking place in the character of the population of the New England States. It is shown that, with the exception of Vermont, the proportion of foreign-born residents has been largely increased during the last decade. The total population of New England in 1890 was 4,700,745. Of these 1,142,339 were of foreign birth, and of the natives 1,079,799 were of foreign parentage. That is, nearly one-half of the population of New England was either born abroad or had foreign-born parents.

The Bellaire Nail Works, Bellaire, Ohio, have recently purchased the site of the old Union Window Glass Works at that place. The statement that this firm intend to erect a nail factory on their newly acquired property is without foundation. They already have a large cut nail factory which has been idle for some months.

CORRESPONDENCE.

The Manufacture of Steel Castings.

To the Editor: In *The Iron Age* of 7th inst. appears a letter from H. L. Gantt, reviewing my recent article upon open-hearth steel castings. Mr. Gantt's criticisms are most fairly taken, and it affords me great pleasure to answer his friendly strictures. My article was written by request of several friends, and was only intended to answer certain inquiries in a very general way, not to deal with details in designing or manufacturing. No doubt exists as to the comparative merits of "bogus" and real steel castings. The latter are very rapidly supplanting the former. All new plants—contemplated or in course of erection—are to be used for soft steel castings, by one of the three processes named by Mr. Gantt, and the large majority will adopt the open-hearth system. Users of steel castings are becoming better posted as to requirements needed. The most successful works are those equipped with proper chemical and physical laboratories, where every heat is most rigidly tested. We are glad Mr. Gantt fully appreciates the prime importance of "hot metal." The writer has seen "melts," held for several hours, to accumulate sufficient heat, to be poured without "skulling" in the ladle or chilling in the molds.

All such troubles have now been entirely overcome by the proper construction and handling of the furnace itself. Common pig and assorted scrap have therefore almost entirely replaced the former expensive easily melted stock. Every failure to produce good, sound castings (and there have been some lurid experiences in this line) we believe can be primarily traced to defective furnaces with insufficient power.

This leads to Mr. Gantt's inquiry as to unequal "shrinkages," and means for their prevention. No pretention of any infallible method is made. But as stated, "proper precautions" through the entire process will remove nine-tenths of all serious troubles from undue shrinkages, blowholes, &c. Apparent and commercial reasons forbid publishing exact details, either of mixtures or materials used, but I would be pleased to meet Mr. Gantt or any others and explain matters personally. No one rule is universal. But certain principles underlie every application. The metal must be accurately adapted to the individual purpose. Metal for certain requirements would be totally inapplicable for other uses. Only intelligent experience can decide in any given insance. Certain mixtures will shrink more than others, will take on oxygen more readily, both in the furnace and the molds. But a hot furnace, quick melting down of initial charge, and a reducing flame, while the metal is being covered with slag, with least exposure to oxidizing influences, are always imperative.

A proper manganiferous slag, varying in richness as called for, is also imperative. The less time taken to perfectly melt and amalgamate the charge the less danger from oxidation, the better the castings. Slag is not impervious like a crucible. The "bath" should be melted "dead" and well worked, not poured in any raw or uncertain condition. Color and fluidity while pouring, tests and structure of tests cold determine conditions as to solidity. Excessive additions of manganese, silicon, aluminum, chromium or other reducing agents are positively harmful, especially when made to correct poor melting. Such metal, although fluid, will shrink far more than the same stock naturally melted and physicked only as far as really needful. Again, excessive quantities cannot perfectly combine, and hence hard places, cracks and seams in cooling. Particular castings require great care in "mixing" to avoid excess of phosphorus or similar evils and to make strong metal.

There is certainly a limit of heat to be given any stated mixture other than that imposed by the furnace itself, which should not be exceeded. If too hot for pouring, allow to settle well in the ladle first. The hotter the metal the greater the shrinkage, as the surfaces cool more quickly. Any particular mold should be turned at the middle or latter part of the pouring.

Now, we will suppose the metal to be just right in any given instance; the molds must receive equal attention. This opens a still wider field, which can only be briefly touched upon. The molds should be made of the most refractory material and most carefully prepared in every detail. Two things are imperative. The molds must be well ventilated at the base as well as sides, and so arranged that shrinkage can naturally relieve itself. That is, molds must be porous and also elastic to a certain degree. In small molds the metal chills quickly. The facings must not be too rigid or the metal will pull apart. The metal, as it settles, must be fed from risers properly adjusted as to size and height. With larger molds stronger and thicker facings are used to stand wash and pressure, and the elasticity is obtained by proper backing, while the angles and different thin places are made solid and held firmly by brackets and temporary gates not in the finished casting.

The same relative points apply equally well to the matter of cores. The most perfect castings we have ever seen were made by causing a pressure mechanically toward the surfaces from the centers. The best heavy ingots for ordnance abroad are compressed by heavy hydraulic machinery, such extreme pressure being applied while metal is still fluid and sustained until cooled in lieu of forging or rolling. The same principle of pressure while fluid should be applied in every instance. Molds should be "teemed" as quickly as possible and give every chance for contraction thereafter. I am aware that critics will say "we know all this now. All this is only common sense tempered by experience." But such treatment combined with "eternal vigilance" produces good castings uniformly.

I may now refer to Mr. Gantt's criticism in the matter of annealing. The issue is more apparent than real, and I am sure we are perfectly agreed on the main points. It was not intended to state that soft steel castings were never to be annealed. All Mr. Gantt claims on principle is perfectly true. There are, however, many soft steel castings of 0.25 to 0.30 per cent. carbon which are perfectly merchantable without annealing, and if Mr. Gantt saw certain heats cleaned, heads and gates knocked off and cores cleaned out by drift pins, he would be fully satisfied with the strength of the steel. Other castings especially subject to shock must be annealed, such as draw bars and intricate railroad and machine work. Special and government work is always annealed. Referring to the plan shown, two large annealers will be seen, each capable of holding some 20 tons. The writer has such annealers in every plant he has yet erected or designed. The cost of annealing open hearth castings is small, the benefit certain. In a late plant, now building, everything will be annealed—that is, heated red hot and allowed to cool slowly away from the air, but not packed in scale like malleable castings. Annealing increases the elongation 50 to 150 per cent., the tensile strength remaining about the same, while tempering in oil and subsequent light annealings will increase the tensile strength appreciably and refine the grain.

Several friends, upon a hasty inspection, write me that the design of my plan as a whole is not "modern." The plans like the subject matter are only general. It was proposed to show the different styles of cranes, &c., in one set of plans. Many like the overhead crane system, by power or electricity, but are deterred from adopting it by the large first outlay. Such could use swing cranes as others have done and are now doing to good effect. Some might like to add a small open-hearth furnace, an oven and a crane to the present foundry; for such the swing crane is shown. Others would prefer to have a perfect plant from the start and install an overhead crane, which passes over the top of the furnaces and serves also the cleaning and finishing shops. Such a system is in use in most of the best works here and abroad, and is installed in several of the writer's own works. There can be no doubt, it is the most comprehensive and best labor-saving device yet produced, saving every part of the foundry yet leaving everything clear.

Most respectfully yours,

J. A. HERRICK.

NEW YORK, April 15, 1892.

PERSONAL.

H. S. Pickands of Pickands, Brown & Co., Chicago, has been sojourning for the past month on the Bermuda Islands. Not satisfied with the laurels he has won in the iron trade, he entered the annual race given by the Royal Yacht Club of Bermuda, and won the prize, a silver cup. It is not generally known that the Major can handle a sailing vessel as skillfully as he can run a blast furnace.

A. J. Forbes Leith of the Illinois Steel Company has gone to Scotland for his usual summer sojourn.

James C. Bayles has returned from Europe.

Murray Morris Duncan, manager of the Roane Iron Company, at Chattancoga, has accepted the position of manager of the Antrim Iron Company of Mancelona, Mich., made vacant by the resignation of G. Fitzgerald.

Lloyd Booth of the Lloyd Booth Iron Mfg. Company of Youngstown recently visited the Temescal tin mines in California.

An admirable paper, in memory of Alfred Charles Hobbs, the famous lock maker, has been contributed by F. W. Durfee of West New Brighton, N. Y., to the American Society of Mechanical Engineers. It is written in the happiest vein and does full justice to one so widely known and greatly admired.

John G. A. Leishman, vice-chairman of Carnegie Brothers & Co., Limited, of Pittsburgh, sailed for Europe last week, and will be absent about two months.

The Standard Iron Company, Bridgeport, Ohio, recently awarded the contract for their new building to the Indiana Bridge Company of Muncie, Ind. They have also let a contract for a Corliss engine to the Brass Foundry and Machine Company of Fort Wayne, Ind., and have given an order for 450 horse-power of boilers, fitted with Roney stokers, to the Stirling Company of Barberton, Ohio. The building in question is pretty well under way, and it is expected that the entire mill will be completed by early fall. The new building will contain four new sheet mills for the purpose of increasing their output of corrugated iron, galvanized iron and light sheets for roofing purposes.

OBITUARY.

JOSEPH MORRIS CHILDS.

Joseph M. Childs died at his home in Utica, N. Y., April 15. He was born in Cassville, April 17, 1840. Early in the sixties he became associated with Norman Merrill and opened a general supply store in his native place. He was, however, ambitious, and went to Utica in 1864 and embarked with his father, the late Justus Childs, in the agricultural supply business. In 1865 his father died and he was left in an embarrassed financial condition, owing to the reduction in the prices of his line of goods at the close of the war. With indomitable pluck, however, he decided to continue. In a few years he had not only discharged a large indebtedness, but built up a vast business, which allowed him to accumulate a large fortune. At the death of the senior Childs, Wallace, a brother of the reviving partner, shared in the business, and upon his death, a few years later, another brother, Orlando J. Childs, became associated with Joseph. The firm made a specialty of Buckeye mowers, and through great business zeal and wise advertising the machine became known and used all over the country.

In 1870 the business, which had outgrown its quarters, was transferred to 12-20 Fayette street. In 1870 Orlando J. Childs withdrew from the firm and another brother, Charles H. Childs, succeeded him. This firm continued until 1890, when the senior partner withdrew and a new co-partnership was arranged under the name of Charles H. Childs & Co., the junior member being Everett F. Crumb.

WILLIAM SMITH.

William Smith, one of the oldest iron manufacturers of Pittsburgh, died at his home in that city last week at the advanced age of 73 years. Mr. Smith was born in Dudleyport, England, on February 18, 1819, and came direct to Pittsburgh in 1842. Upon his arrival there he engaged in the foundry business, and for two years operated the Carron Foundry. Later he formed a partnership with Jacob Painter and Jos. A. Jenks under the firm name of Jenks & Painter. A plant was started on Main street, Allegheny, Pa., and the firm continued in business until 1854, and during that time furnished the South with a great deal of fine cotton machinery. In 1854 Mr. Smith withdrew from that firm and engaged in the foundry business for himself in Pittsburgh. In 1858 Jas. Park, Jr., and David E. Park bought an interest in this last enterprise of Mr. Smith. In 1861 Mr. Smith, Edwin Miles and Thos. S. Blair put in operation the Black Diamond Steel Works. Some years after Jas. and David E. Park bought their interests and at the present time are operating the plant. At the breaking out of the war Mr. Smith furnished considerable material to the Government, and made shells which were used in the attack on Island No. 10 and the projectiles for the Monitor in its famous battle with the Merrimac. This material was shipped on Sunday, and he had to leave church to attend to it. At the close of the war he started a pipe mill, and at the time of the panic of 1873 had one of the largest and best equipped pipe mills in the country. During the crisis of 1874, through his connection with the Cascare Ore Company and the Escanaba Furnace Company, he failed. Unlike the ordinary cases of bankruptcy, he paid 69 cents on the dollar, and it is stated had his assets been properly handled he would have paid his entire indebtedness with interest. This would have still left him a fortune. For the past few years Mr. Smith has not engaged in business, but has made his home with one of his sons in Pittsburgh.

Lake Shipbuilding.

Reports recently published from the different lake shipyards show that a great deal of work is now under way. Many new vessels are being built, and repair work on old vessels has been more abundant than usual. Vessel owners are evidently looking forward to a busy season and are making ample preparations for it.

At Buffalo the Union Dry Dock Company are building the steel steamer Codorus for the Anchor line, which measures 292 feet over all, 40 feet in beam and 26 feet in depth, and is to be ready for service by June 1. When the steel yard of the Union Dry Dock Company is removed from Blackwell canal to the new location adjoining the old yard on Buffalo river, complete and commodious shops will be erected and an enlarged and improved plant for building metal ships will be put in. Eventually it is intended to add first class engine and boiler works, so that the company can turn out everything necessary to complete a first-class steel ship. The removal will take place next fall. The upper dry dock will be made 25 feet longer and 6 feet deeper, so as to accommodate the biggest vessels that float on the lakes. Two steel steamers similar to the Tioga, but larger, will be built for the Union Steamboat Company next winter.

At Cleveland three launches have been made within the past two weeks. The first was the United States steamer Lilac. The second was the Andaste of the new monitor type, built to compete with the McDougall whalebacks, for the Lake Superior Iron Company. The third was the Samuel Mitchell, an ore carrier also, owned by Samuel Mitchell of Negaunee, and others. The Andaste was built by the Cleveland Shipbuilding Company, and the Lilac and the Samuel Mitchell by the Globe Iron Works. A second monitor is being built for the Lake Superior Iron Company, and after it is launched a third will be started on the builders' account. Three vessels are on the stocks at the Globe Works—the United States lighthouse tender Columbine, a freighter for the Anchor line, and the Maritana for the Minnesota Steamship Company, the last named being 350 feet long, 45 feet in breadth of beam and 24 feet deep.

At Detroit a wooden passenger steamer is being built by the Dry Dock Company for the Graham & Morton line of Chicago, a steel freighter for the Anchor line, a steel ore carrier for the Iron Cliffs Company, a new ferry steamer and a steel passenger steamer. A powerful steel ice crusher, 300 feet long and 51 feet wide, is to be built for service next winter at the Straits of Mackinac as a car ferry.

At Toledo the Craig Shipbuilding Company will launch an iron steamer on May 15, to be used as a lumber carrier. They are also building a car ferry for the Toledo, Ann Arbor and Northern Railroad to run across Lake Michigan between Frankfort, Mich., and Kewaunee, Wis. She will be able to carry 24 loaded freight cars each trip and will be capable of breaking the heaviest ice with her powerful machinery. The contract price is $150,000 and her dimensions are 250 feet over all, 51 feet beam and 17 feet depth. A consort to be towed by the steamer and also carry 24 cars will next be built.

At Bay City, Mich., four iron lightships are being built for service on the Atlantic coast by F. W. Wheeler & Co., who have also in hand a 3500-ton steel steamer for the Hollister Transportation Company, a wooden steamer for James McBrier and others of Erie, Pa., another wooden steamer for A. E. Stewart and others of Detroit, and a 2000-ton schooner. James Davidson of the same place is building three large wooden steamships, each 326 feet long, 43 feet beam and 26 feet deep, to cost $150,000 each. He also has well under way a 100-foot tug.

At Marine City, Mich., Morley & Co. are building two wooden steamers—the J. J. Hill of 750 tons and the William B. Morley of 1250 tons.

At West Superior, Wis., the American Steel Barge Company have ten whalebacks under course of construction, besides a special tug. The smallest of the whalebacks is 320 feet long. The two of them which are nearing completion are steamers and are Nos. 119 and 120. It is expected that both will be launched on the same day before May 1. Capt. Alexander McDougall says that the company have much work ahead, chief of which will be the construction of one and probably two boats for the World's Fair, the first attempt to make a passenger ship on the whaleback model. The total lengths of the boats now under construction, or under contract, is nearly 1 mile. The big dry dock, work on which commenced last December, is all completed except the timber and gates. It will be finished by July 1. The dock is 554 feet long—much the longest on the lakes—and will be able to hold two large vessels at once.

At South Haven, Mich., a wooden passenger steamer is under way. It is claimed to be the finest yet constructed on the east shore of Lake Michigan. She will be launched some time during the summer, but will probably not go into commission before the opening of next year. The new boat is building to meet the demands of World's Fair year and its great passenger traffic. She will be 175 feet over all, 31 feet wide, and will draw 9 feet of water. Staterooms for 200 people will be provided. Captain Edward Napier, who now owns the steamer Imperial, at Chicago, is also building a new boat for the passenger traffic between the lake front and Jackson Park. She will be launched early in May.

At Colehour, near South Chicago, Ill., the Chicago Shipbuilding Company are at work on the steel steamer Mariposa, which they are building for the Minnesota Steamship Company, and expect to launch early in May. She is a duplicate of the Maritana, now under construction by the Globe Iron Works of Cleveland.

A single deck steel steamer for the Iron Cliffs Company, also building at this yard, is nearly as well along. This boat will be 225 feet long, 35 feet wide, and will cost $120,000. Her duplicate is under construction at Detroit.

The above details show that the lake shipbuilding interests are fairly prosperous. If the coming summer meets the expectations of the vesselmen, the shipyards will have plenty to do in the following winter, It is to be hoped that this will prove to be the case, as the shipbuilders are now large consumers of iron and steel. Very few wooden vessels have been built in late years for lake service.

Montreal papers are urging the Dominion Government to hasten the excavation of the canals to the uniform depth of 14 feet, now that the Ottawa authorities have decided to refuse a rebate of tolls on grain transhipped at Odgensburg, closing this channel to traffic. The latest surveys show that much heavy work remains to be done between Lake Erie and Montreal. On the Lachine Canal 2 feet of rock bottom must be removed along a course of 6½ miles and at other points there are numerous shoals. It is obvious, therefore, that for years to come the export grain trade by the St. Lawrence route must be aggravatingly slow. With 14 feet draft in the canals, the Canadian lake marine owners assert their ability to withstand all competition.

MANUFACTURING.

Iron and Steel.

The new tin-plate plant now being erected by the Blairsville Rolling Mill and Tin Plate Company, at Blairsville, Pa., will be ready for operations early in May. The plant consists of a tin-house, 40 x 120 feet, built of brick; a frame building, 68 x 128 feet, covered with corrugated iron, and a boiler house, 32 x 75 feet. These buildings have been finished and the coucern have contracted for a 500 horse-power engine, one smaller engine, three pairs of rolls for rolling sheet iron, two pairs of cold rolls, two Morewood pickling machines and other necessary machinery needed to complete the plant. When in full operation the works are expected to give employment to about 200 hands, as the firm will roll their own sheets in addition to tinning them. Their production is expected to be from 1200 to 1500 boxes of 14 x 20 sheets per week.

Two of the puddling furnaces in the new mill of the Eagle Rolling Mill Company at Ironton, Ohio, have been put in operation. The balance of the puddling department will be started up at an early date.

The Brown-Bonnell Iron Company of Youngstown, Ohio, have been granted a charter of incorporation, with a capital stock of $1,200,000. The new concern succeeds the old firm of Brown, Bonnell & Co.

Last week there was placed in the Homestead Steel Works of Carnegie, Phipps & Company, Limited, at Homestead, Pa., an important piece of machinery of which there is no duplicate in the United States. It is a steel saw weighing 110 tons to cut nickel steel armor plate. These armor plates range in weight from 8 to 38 tons, and reach a length of 20 feet and a thickness of 20 inches. The saw has a blade 7½ feet in diameter geared above and revolving horizontally. The armor plate when about to be sheared is placed on a tilting-table, which is adjustable to any angle, and presented to the edge of the saw endwise. The forward motion of the carrying-table thrusts the plates steadily against the flying teeth, and an angular slab of cold nickel steel weighing several tons is removed in much the same manner as the end is taken off a pine log in a saw-mill. It is to be used also for cutting plates into any desired dimensions. This machine was imported from Germany and is said to have cost about $35,000.

J. J Thomas of Wilmington, Del., representing a company who propose to erect a large manufacturing establishment at Wilmington, Del., was in Pittsburgh last week negotiating for the purchase of a large amount of machinery to be placed in the new plant.

At a meeting of stockholders of the Crane Iron Company of Catasauqua, Pa., held there last week, the following directors were elected for the ensuing year: Samuel Dickson, Chas. S. Wurtz, Lemuel Coffin, Alexander Biddle, Samuel R. Shipley, George M. Troutman, Joseph Wharton, Robert F. Kennedy and H. W. Hazard. The board of directors organized by electing H. W. Hazard, president, and James M. Hodge, secretary and treasurer.

The Edgar Thomson Steel Works of Carnegie Brothers & Co., Limited, at Braddock, Pa., have been appraised by the County Commissioner at $2,300,000.

The Gautier steel department of the Cambria Iron Company intend to put up an addition to their harrow disk works at Johnstown, Pa., to be ready for the coming season. The demand for these disks has been so great that the company were unable to fill their orders as promptly as desired, hence the determination to increase their facilities.

The stockholders of the McCullough Iron Company held their annual meeting at North East, Md., on the 12th inst. The following Board of Directors was elected: E. A. Harvey, Huxley Harvey and George W. McCullough of Wilmington; Enoch McCullough and John W. McCullough of Cecil County, Md.; Henry Whiteley of Philadelphia and W. Irving Walker of Baltimore. The board then organized as follows: E. A. Harvey, president; E. M. McCullough, vice-president; Huxley Harvey, treasurer; John W. McCullough, secretary; Henry Whiteley, managing director; George W. McCullough, general superintendent.

The Baker Chain and Wagon Iron Mfg. Company of Allegheny, Pa., is filling a Government contract for 1100 fathoms of anchor chain for war vessels and light house tenders. This is one of the largest contracts of the kind ever let. Six hundred fathoms of 2-inch links, which is extra large, and 500 fathoms of 1⅛-inch is being made. Walfrid Sylven, Superintending Marine Engineer, United States Light House Board, is directing the tests of the chain. About 700 fathoms have been finished, and has stood the test. The chain must stand a dead weight of 225,000 pounds to the link to meet Government requirements.

The new fish-plate punch at the Albany Iron Works, Troy, N. Y., has been again started up.

An accident happened at the Bessemer Steel Works, Troy, N. Y., April 5, which delayed operations for some days. The Corliss engine that runs the blooming mill broke down. The works had just started up, and the delay was a great inconvenience.

The Poughkeepsie, N. Y., Iron Company are increasing their business very rapidly. It is now reported that on the property recently purchased for $35,000 in the Tower interests, with a wide river frontage, a new blast furnace will be erected Work will probably be begun immediately. This will be a large increase in the capacity of the plant, and of great financial advantage to the city.

The American Tin and Terne Plate Company, 55 and 57 Laurel street, Philadelphia, have been running their new works since the middle of January. They are now turning out 150 boxes of terne plate per week, but have a capacity of double that amount when in full work with both stacks. Their brand, "Keystone," is becoming known east of the Alleghanies, and appears to receive the approval of buyers, as the company find no difficulty in disposing of all they produce. The members of the firm are J. E. Straus and A. E. Arnold, who are also members of the firm of J. E. Straus & Co., American Galvanizing Works, of Richmond street, Philadelphia.

Durham furnace of Riegelsville, Pa., owned by Cooper, Hewitt & Co., is being blown out.

The Gadsden Iron Co., Gadsden, Ala., state that they have determined to discontinue business as soon as their present stock is run out, which will be about two months, and wait for an improvement in the iron market and better prices.

The Unaka Iron Company, capitalized at $2,000,000, shares of $100 each, has been chartered in Tennessee. The principal office will be located at Bristol, Va.

The Bessemer department of the old Worcester Steel Works, Worcester, Mass., has started up with a small force. The concern will hereafter be known as the New England Steel Works.

Preparations are being made to start up the Falling Spring Furnace of Bonebrake, Burkhart & Co., Chambersburg, Pa. It is a charcoal stack, and has been idle for a long time.

The muck department of the old Ironton Rolling Mill, at Ironton, Ohio, idle for so many years, has been put into operation by the Eagle Iron and Steel Company. Fifteen furnaces are now at work, and it is expected that every department of the plant will be in full operation by May 1. Running full the output will be about 100 tons of finished iron per day

It is announced that the Lucinda Furnace, at Norristown, Pa., will be sold at sheriff's sale on May 25 to satisfy a claim of $27,000. The stack as built in 1856 was 55 x 14 feet, but was rebuilt and enlarged in 1889. It has been out of blast for a long time.

A charter has been granted to the Bessemer Iron, Mining and Mfg. Company, at Galveston, Texas, with $1,000,000 capital. R. W. Campbell of Galveston and others are the incorporators. The company will erect furnaces and rolling mills.

The Superior Malleable Iron Company of Superior, Wis., have been reorganized and the capital stock increased from $50,000 to $100,000.

In a recent interview Warner Arms, secretary and treasurer of the Falcon Iron and Nail Company of Niles, Ohio, stated that his firm were watching the development of the tin-plate industry in this country very closely, and that they would probably engage in the manufacture of tin plates before the close of the present year. Mr. Arms believes that it will only be a short time until the United States is making tin plate better and cheaper than it is made abroad.

Furnace F of Carnegie Brothers & Co., Limited, at Bessemer, Pa., which has been undergoing repairs for some time, will be ready for blast about May 1 next. At present this firm are operating six stacks on Bessemer and two on spiegel. They are also the largest purchasers of Bessemer pig iron in the Pittsburgh district.

F. Janson & Bro. of Columbia, Pa., will soon commence the erection of a rolling mill for the manufacture of merchant iron. The structure will be 156 x 200 feet, and the mill will be run entirely on scrap iron.

Machinery.

In the case of the Union Switch and Signal Company of Pittsburgh against the Johnson Railroad Signal Company of Johnstown, Pa., in which the two companies are engaged in a litigation over the ownership of a patent known as the Sykes system, a decision was rendered denying the preliminary injunction asked for.

The Shenango Machine Company, Limited, of Sharon, Pa., have just completed rebuilding a hoist at the blast furnace of the Girard Iron Company, at Girard, Ohio. In addition to doing this, they have done considerable other work in connection with the rebuilding of the above stack.

The Latrobe Steel Works, Latrobe, Pa., are extending their machine-shop equipment. This addition with the tools which it will contain will increase by about 50 per cent. the capacity of the firm for machining tiers. At present the firm are not contemplating any other extensions to their plant.

Wm. Tod & Co., founders and machinists of Youngstown, Ohio, have recently shipped to Carnegie, Phipps & Co., Limited, for use in their Homestead Steel Works, at Homestead, Pa., a lot of tables for the new 35-inch beam mill, the shipment amounting to five carloads. The same firm have recently furnished a 15-ton hydraulic crane to the Cleveland Rolling Mill Company, Cleveland, Ohio. This crane will be used for handling rolls and housing for one of their trains.

The Pittsburgh Locomotive Works have commenced the erection of a new machine shop at their plant in Allegheny, Pa. The building will be of brick and 36 x 125 feet in size. A new blacksmith shop 365 x 100 feet with an 80-foot wing for a hammer shop is also being erected.

Butler & Martin, the Middletown, N. Y., foundrymen, have received an order for a large marine engine, the fifth of this kind they have made since their start a short time ago. The bed plate will weigh about 4000 pounds. Their foundry is working at its fullest capacity and they have secured the trade of one of the largest New York houses for this class of work.

The Duvall Engine Works, which were removed to Roanoke, Va., from Zanesville, Ohio, are about ready to begin the manufacture of machinery, builders' iron and castings. They will give employment to 100 men at the start.

The Tupelo Foundry and Machine Company, Tupelo, Miss., of which J. C. Smith of Jackson, Tenn. is president, will enlarge their plant to eight times its present capacity and put in a large amount of new machinery.

B. P. Shelor is preparing to erect a bolt and machine screw factory at Elliston, Va.

The Jeffrey Mfg. Company of Columbus, Ohio, report good progress with the operating of their coal-mining machines with electric power. They have now 51 electric mining machines in daily use, and claim to have the only successful coal-mining machine operated by electricity. Recent orders include the following: Second order for one Jeffrey electric mining machine from the Congo Mining Company, Congo, Ohio. Third order for one Jeffrey electric mining machine from the Redstone Oil, Coal and Coke Company of Grindstone, Pa. Equipment for complete Jeffrey electric coal-mining machine plants for the Hocking Valley, two plants, each consisting of boilers, engines, dynamos and all necessary connections to run four Jeffrey electric mining machines, with a daily tonnage capacity of 800 tons, and a third plant complete to run six Jeffrey electric coal-mining machines, with a daily tonnage capacity of 1200 tons.

J. T. Cullen's Star Boiler Works and the Globe Foundry and Machine Works of Clinton, Iowa, have been destroyed by fire.

John Wood, Jr., of the Schuylkill Foundry and Machine Works, Conshohocken, Pa., reports an active business in his patent water tube boiler at the main works and at the branch works at East Saginaw, Mich., and Zanesville, Ohio. Recent shipments are as follows: 1000 horse-power to Duncannon Iron Company, Duncannon, Pa.; 600 horse-power, Windsor Locks Steel Company, Windsor Locks, Conn.; 200 horse-power, New Haven Rolling Mill Company, New Haven, Conn.; 1000 horse-power, J. Wood & Bros. Company, Conshohocken, Pa.; 400 horse-power, Hughes & Patterson, Philadelphia; 600 horse-power, Chester Pipe and Tube Company, Thurlow, Pa.; 500 horse-power, John and James Dobson, Philadelphia; 500 horse-power, Alex. Kerr Bro. & Co., Salt Works, N. Y.; 100 horse-power, Pottstown Iron Company, Pottstown, Pa., and 150 horse-power to Pottsville Steel and Iron Company, Pottsville, Pa. The greater number of orders now in hand are for electric light and railway purposes, for which these boilers are particularly adapted. The increasing demand for these boilers will necessitate the establishment of other works in addition to those now in operation.

The E. W. Bliss Company, Limited, of Brooklyn, N. Y., has discontinued operating

the works of the Stiles & Parker Press Company, at Middletown, Conn., and the business of the latter will hereafter be carried on at the Brooklyn plant, to which the machinery has been removed. The Middletown works are now offered for sale or rent, together with the engines, boilers, foundry fixtures and main line of shafting.

The buildings and machinery of the Altham Motor Company of Swansea, Mass., have been destroyed by fire. Loss, $12,000.

Allison's Boiler Works, at Findlay, Ohio, have been burned at a loss of $3000.

The Common Sense Engine Company of Springfield, Ohio, will locate a new works at Muncie, Ind., where five acres of land have been donated them and $25,000 of stock has been subscribed for.

The large order for tinning machinery which the Lloyd-Booth Company, of Youngstown, Ohio, have been filling for the American Tin Plate Company, at Elwood, Ind., is about completed, the last shipment having been made during the present week. This firm have recently received an order for a 25-ton shear for the Maumee Rolling Mill Company of Toledo, Ohio.

At a meeting of the stockholders of the Pittsburgh Gas Engine and Mfg. Company, held in that city last week, it was decided to increase the capital stock of the company to $25 ,000. The concern is a new organization formed to manufacture gas engines and petroleum engines.

The Morgan Engineering Company of Alliance, Ohio, have received a contract for a 30-ton electric driving crane, to be placed in the extension now being made to the plant of the Norristown Steel Company at Norristown, Pa.

The Miami Valley Boiler Company of Dayton, Ohio, are rebuilding their works, which were burned in February.

The S. Obermayer Foundry Supply Mfg. Company of Cincinnati, Ohio, have been reorganized under the title of the S. Obermayer Company, and the capital stock increased from $100,000 to $165,000.

W. B. Pollock & Co., proprietors of the Mahoning Boiler Works, at Youngstown, Ohio, have commenced the erection of a new office. The building will be 22 x 38 feet, two stories high, frame and shingled, with a fireproof vault extending to the upper story. There will be public and private offices on the first floor, and a private office and drafting room on the second floor.

Seaman, Sleeth & Black, proprietors of the Phœnix Roll Works of Pittsburgh, manufacturers of rolling mill machinery of all kinds, are operating their plant night and day in order to keep pace with their orders.

R. G. McAuley of Pittsburgh, who has represented in that city the Murphy Iron Works, Detroit, Mich., manufacturers of the Murphy patent smokeless furnace, has resigned his position in order that he may give his entire time to the McAuley feed water heater and purifier, of which he is the inventor. John H. Nicholson will in the future represent the Murphy Iron Works in the Pittsburgh district, his office being Room 503, Lewis Block, in that city.

A reorganization of the Wilhams Indicator and Gauge Alarm Company has been effected, and the office of the company is now located at 110 Market street, Pittsburgh, Pa. The firm will manufacture and place on the market Williams' Safety Low and High Water Columns Guage Alarms, Williams' Rotating Self Grinding Guage Cocks, copper floats for steam and hydraulic purposes and like specialties. These goods were formerly manufactured by A. Fulton's Son & Co. Among recent orders filled by the new firm for water columns was one for 19 of the No. 2 size for the Union Rolling Mill Company, at Cleveland, Ohio. In addition to the above they have recently filled numerous other large orders, and state that the outlook for future business is very bright.

The Westinghouse Electric and Mfg. Company of Pittsburgh have received a contract for equipping a large number of cars for the Consolidated Street Car Lines of Brooklyn, N. Y. They have also received orders for Westinghouse equipments for street car lines located in Rochester, N. Y., Lincoln, Neb., and Evanston, Ill.

Hardware.

A number of extensive additions and improvements are being made at the plant of the New Castle Wire Nail Company, located at New Castle, Pa. A number of new machines have recently been put in which will increase the capacity of the plant considerably.

Kidd Steel Wire Company, formerly of Harmarville, Pa., removed several months since to Sharpsburg, where increased facilities are secured.

The Penn Lock Works, Geo. W. Nock proprietor, are adding a three-story building to their present plant, part of which is designed for storehouse and part for factory use. With these increased facilities orders will be filled more promptly. Mr. Nock is giving especial attention to hardware novelties and locksmiths' supplies, and also to patented specialties.

The Jeffrey Mfg. Company, Columbus, Ohio, advise us that they are enjoying a flourishing business in their chain specialties. They allude to the demand for their detachable drive chains, which are represented in their advertisement in this issue as having reached their most sanguine expectations and refer to the outlook for the future as very bright.

Norton Emery Wheel Company, Worcester, Mass., have recently made improvements in their factory, which is located on the lines of two railroads and has a spur track entering the building. The plant is exceptionally well arranged and has many appliances calculated to facilitate the handling of materials and product. This concern will soon bring out a new combination emery grinding machine.

Miscellaneous.

The Owego, N. Y., Iron Bridge Works are busy getting their plant in the old Southern Central Railroad shops in shape for the manufacture of iron bridges. The Lehigh Valley Railroad Company are putting in two side tracks for their use, and a new Payne engine has been purchased for the plant. They are also having manufactured a large pneumatic riveting machine. The works will be supplied with the best machinery for making iron bridges and the company already have several large contracts on hand.

The Groton, N. Y., Bridge and Mfg. Company have secured a contract from the Syracuse, N. Y., Waterworks Company for making the steel intake pipe which will be placed in Skaneateles Lake in the preparations to be made to carry water to the city. The contract calls for 6500 feet of ⅝ inch pipe, 54 inches in diameter, to be made of steel boiler iron.

The Hitchcock Manufacturing Company of Cortland, N. Y., are putting in a new 100-horse-power boiler. This will afford a reserve of 100-horse power of steam, available in case of accident. The boiler was made by W. H. Sheppard & Co. of Havana, N. Y.

The Fabric Fire Hose Company of Warwick, N. Y., are now filling an order from their Western agents, E. B. Preston & Co , for 25,000 feet of 2½-inch jacket hose to apply on their contract to supply the World's Columbian Exposition with fire hose. This order will be used for the inside protection of the main building, which covers 44 acres of ground, previous shipments having been used for outside protection. This order is said to be the largest ever given to a single hose-pipe manufacturer in the world.

The case against the Buffalo Brass and Iron Bedstead Company, which was recently tried at Utica, N. Y., at the United States Court before Judge Cox, was dismissed. The allegation against the defendants was that they brought over workmen from Scotland and Canada under contract to work for them. The defense was that the company were not incorporated until August last, and at the time the men were brought over they were not incorporated, and therefore the present company could not be held liable. Seven other cases against the company will be tried at the United States Court in Canandaigua.

J. M. Patson & Co., Philadelphia, are making arrangements for embarking very extensively into the manufacture of stove-plate facings, and expect in a few weeks' time to be able to offer the trade both heavy and return facings equal to any made in the country. They state that their orders this year have been fully up to the average in volume, and taking into consideration the general depression in trade and low prices prevailing their business has been and promises to continue very satisfactory. The company are at present engaged on an extension of facilities for production at their works on Delaware avenue, Philadelphia, in view of the projected expansion of business in stove-plate facings, as notified above.

Among recently organized corporations in Illinois are the following: Kewanee Boiler Company of Kewanee, capital stock, $100,000; incorporators, E. E. Baker, Horton Vail, J. P. Dugger; the Cicero Light, Heat and Power Company, Cicero, capital stock, $150,000; incorporators, E. L. Jeffrey, H. P. Lucas and H. R. Brawns; Drive Chain Mfg. Company, Chicago, capital stock, $150,000; incorporators, Daniel Evans, Albert E. Gibbs, N. P. Hamill.

The Lunkenheimer Brass Mfg. Company of Cincinnati, Ohio, will make a display at the World's Fair of their specialties in valves, sight feed lubricators, oil and grease cups, &c., and will exhibit a full line of brass and iron goods, besides some novelties in steam whistles and sight feed lubricators. They report a brisk business, including contracts for special work for United States cruisers.

A company has been organized at Huntsville, Ala., to operate a wire screen factory which will be known as the Huntsville Screen Company.

La Grange Plow Works, La Grange, Ga., owned by Pike Bros., were destroyed by fire last week, involving a loss of $6,000, with only $1,100 insurance.

The car repairing shops of the Reading Railroad Company, situated at Nicetown, Philadelphia, have been destroyed by fire, involving a loss of $100,000. The entire structure, machinery and 70 coal and freight cars were burned.

The Bucyrus Steam Shovel Company, Bucyrus, Ohio, have decided to include a boiler shop in the plant which they will erect at South Milwaukee, Wis.

The Berlin Iron Bridge Company of East Berlin, Conn., have taken the contract to build a producer building for the Solvay Process Company of Syracuse, N. Y. The building will be 30 feet wide, 100 feet long and three stories high, built entirely of iron, even the floors being made of plate iron in order that there may be no wood work about the building to take fire.

The extensive plant now being erected by the Pittsburgh Brass Company on Locust street, Allegheny, Pa., is nearing completion. Part of the machinery will be put in place during this month.

The Dickson Car Wheel Company of Houston, Texas, have increased their capital from $50,000 to $75,000, and will enlarge their works.

The Middleport, N. Y., Mfg. Company, at their annual meeting, declared a dividend of 20 per cent. on their capital stock and elected the following officers: President, George W. Eddy; vice-president, George D. Judson; secretary, L. S. Freeman; treasurer, James Compton; manager, A. C. Park.

The Gilbert Car Works, at Green Island, N. Y., were damaged by fire on the morning of April 8 to the extent of $5000. The loss was confined to the coach house and is covered by insurance.

The Groton Bridge Company of Groton, N. Y., have just shipped a large number of iron telegraph poles, which will be used on lines in Mexico.

The Hinckley Brake Company, capitalized at $100,000, half paid in, have filed articles of incorporation at Trenton, N. J. The object of the company is the manufacture and sale of railroad-car attachments.

The Solvay Process Company of Syracuse, N. Y., are erecting a three-story building, 300 x 60 feet, for the manufacture of alumina. The new structure will be completed in September and will be capable of producting between 15 and 20 tons per day.

A boiler has been patented by E. A. Wheeler of Sharon, Pa., which is especially designed for raising steam with the waste gas from blast furnaces and heating furnaces. One boiler is in operation at the Alice Furnace, Sharpsville, and three at the Wilkes Rolling Mill, Sharon, Pa.

The following is the analysis of the special grade Chickies mill iron made by Haldeman, Grubb & Co. of Chickies, Pa., principally for use as a mixture with high phosphorus and cinder irons; also high silicon Southern brands:

	Per cent.
Phosphorus	0.184
Sulphur	0.027
Manganese	0.201
Silicon	0.640

This iron is made exclusively from native ores mined in that section of the State.

The Lake Superior Iron Company have declared the regular dividend of $1 per share and an extra dividend of $2 per share from the reserved earnings of previous years, payable April 28 to stockholders of record April 21.

The Allegheny Heating Company, suppliers of natural gas to residences and manufactories located in Allegheny City, Pa., have declared a quarterly dividend of 2 per cent.

TRADE REPORT.

It is estimated that in all about 20 cargoes of Foreign Ore, recently arrived and afloat from Mediterranean ports, have been sold since the Hart failure, practically every importer of Ore having contributed. A good many rumors are current in relation to the prices realized, sellers claiming that they did not go below 6½¢ per unit, while buyers claim to have done 6¢, and even better. It is estimated that the total sales have been between 40,000 and 50,000 tons, which is so much cheap stock for the smaller furnace companies of Eastern Pennsylvania. Although little Lake Ore will be able to reach this district this year, it should be noted that under exceptional circumstances some Lake Ore does get in. Thus a round lot of Ore was bought by a Schuylkill furnace at $4.33, delivered, freight from Buffalo being $1.55. So far as we can learn there are few cargoes of Mediterranean Ore still afloat unsold.

The Pig Iron markets throughout the country are on the whole dull. The proposed Southern consolidation is attracting some attention. As yet the negotiations have not proceeded far enough to enable any judgment to be formed as to the eventual success. What cutting in prices there is comes from the smaller concerns at the present time, the larger Southern producers having pretty well filled up. Pittsburgh has again weakened on Bessemer Pig, and there are reports in some quarters that $14 has been shaded.

The Pittsburgh market is stated to be in an agitated condition over the large sales of Billets reported to have been made by an Eastern Rail mill, transactions footing up to 40,000 tons being spoken of. So far as we can learn, the Maryland Steel Company, which is the works alluded to, have sold 10,000 tons to a Rod mill in Eastern Pennsylvania. We cannot trace any other sales, and believe the Pittsburgh reports to be exaggerated. Still, Billets are weaker.

The consumption of Wire in different forms is spoken of generally in the trade as being enormous. A second break down of a Chicago Rod mill has caused another flurry in the Western Rod market.

In manufactured Iron and Steel a number of centers report a fair outlook, but prices remain hopelessly low, the Plate market in particular being in a very demoralized condition. Some interesting data are given in our Philadelphia report, which mentions also as a feature the appearance of a sharp competition in the Bar trade of Steel. Structural Iron makers note a growing demand for Channels, notably on the part of Bridge Builders. Beams are lower in Chicago. The Wrought Pipe trade is beginning to pick up, and Sheets are quite active.

In Old Material Chicago reports unusually large sales at low prices.

The demand for Copper Wire Bars has been the most encouraging feature in that metal, indicating a heavy consumption for electrical work. The shutting down of the Anaconda is only for temporary repairs. Tin has scored an advance of ¼¢ ℔ lb during the week, under large transactions. In the Lead market the West records quite heavy sales. Spelter is firm, although it is not quite clear yet that the amounts bought for export will really go out. Tin Plates are quiet.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, April 20, 1892.

Agricultural implement makers are expected to enter the market for their season's requirements in Iron and Steel earlier than usual. Some of them are inclined to buy now, but they first desire to be satisfied that prices will go no lower. Those who have already made inquiries express surprise that bids received are somewhat higher than were made last year. This is rather singular, and can only be explained on the ground that the mills found such contracts unprofitable. Not a few of the mills catering to this trade are disinclined to sell very far ahead at present rates, believing that they cannot do worse, but may do better, before the return of another winter. Beams have gone lower under active competition for business.

Pig Iron.—Good sales are reported of all kinds of Iron. Local Coke has been in much better demand, and there is reason to believe that transactions have been more important than either sellers or buyers are willing to make public. Consumers are being convinced by hard facts that there is a bottom to the market, and those who have work assured are more freely covering their requirements. Southern Coke is active, especially soft grades. Bottom on No. 2 Soft appears to be $13, at which price there have been quite heavy sales. Southern makers have refused offers at a trifle under this rate, whereas a short time since they were accepting such business submitted for approval by their agents. Lake Superior Charcoal is wanted by more large consumers, who have been trying, but thus far ineffectually, to push down prices to $16 or under. The situation as a whole is looking better than for some months, and it is earnestly hoped that there may be no setback now. Quotations are for cash as follows:

Lake Superior Charcoal	$16.50 @ $17.00
Local Coke Foundry, No. 1	14.75 @ 15.50
Local Coke Foundry, No. 2	14.00 @ 14.50
Local Coke Foundry, No. 3	13.50 @ 14.00
Local Scotch	15.00 @ 16.00
Ohio Strong Softeners	17.00 @ 17.75
Southern Coke, No. 1	15.50 @ 15.75
Southern Coke, No. 2	14.00 @ 14.50
Southern Coke, No. 3	13.25 @ 13.75
Southern, No. 1, Soft	14.00 @ 14.50
Southern, No. 2, Soft	13.25 @ 13.75
Southern Gray Forge	13.25 @ 13.50
Southern Mottled	13.00 @ 13.50
Tennessee Charcoal, No 1	17.50 @ 18.00
Alabama Car Wheel	21.00 @ 23.00
Coke Bessemer	15.75 @ 16.25
Hocking Valley, No. 1	17.00 @ 18.00
Jackson County Silvery	17.25 @ 18.25

Bar Iron.—Sellers of Bar Iron report prices settling to a slightly lower basis, with but a limited trade in progress; even a carload order is now considered desirable business. The valley mills are quoting 1.50¢ at mill, but orders are being taken by most makers at 1.55¢ @ 1.60¢, Chicago, half extras. Soft Steel Bars are selling at 1.75¢ @ 1.80¢ for mill shipments. With considerable business doing in a small way and a few large inquiries in hand jobbers quote 15¢ ℔ 100 advance from stock.

Structural Shapes.—A large business is reported in building material, and bridge work is also more active. Building contracts have been let the past week which will require upward of 1000 tons of Beams, while repair work on old structures is making the demand active for small lots. Open quotations on Beams and Channels have dropped to 2.15¢ for large lots, with heavy buyers claiming that they are able to do considerably better. Small lots sell up to 2.50¢ from stock. Angles from mill are quoted 1.90¢ @ 2¢; Tees, 2.40¢ @ 2.60¢; Universal Plates, 2¢; and Sheared Plates, 1.92¢ @ 2¢.

Plates, Tubes, &c.—The Plate men are figuring on a great deal of work in the aggregate, but no very large lots. Prices are about as they were. Advices from mills report Tubes a little stronger, but no change has been made. Dealers quote from stock as follows: Tank Iron, 2.40¢ @ 2.50¢; Tank Steel, 2.30¢ @ 2.40¢; No. 10 to No. 14 Iron or Steel Sheets, 2.40¢ @ 2.50¢; Flange Steel, 2.90¢ @ 3¢; Shell Steel, 2.60¢ @ 2.75¢; Rivets, 4¢ @ 4.25¢; Boiler Tubes 3 inch and larger, 70 %; 2¾ inch and less, 55 % off; Tank Steel in mill shipments is quoted 2¢ @ 2.10¢.

Sheets.—Large buyers report the Black Sheet mills unexpectedly firm in their views and asking an advance for September delivery over July and August. Good orders continue to be received by mill agents from manufacturing consumers. A sale of 300 tons No. 20 was made at 2.50¢, Chicago; No. 27 Common is held at 2.85¢ @ 2.90¢, carload lots Chicago, and selling at 3¢ from jobbers' stocks. Galvanized Iron has been much more active the past week both for mill lots and small quantities from stock. Quotations are continued at 70 % and 5 % for mill shipments of Juniata, and 60½ % and 2½ % from stock.

Merchant Steel.—The April trade in cheap Steel continues excellent, with a very promising outlook for future, as indicated in the general remarks above. Quotations are unchanged at 2¢ @ 2.25¢ for Machinery Spring and Tire Steel in carload lots, according to quality and finish, and 6.25¢ upward for Tool Steel.

Track Supplies.—The Rail situation is looking up. Quite a good tonnage has been entered the past week and more business is in sight. The firmness of prices is evidently having an effect in bringing railroads into the market whose managers hope by waiting to be able to buy cheaper. Prices quoted are $31.50 @ $32 for ordinary quantities and $31 for large lots. Iron or Steel Splice Bars are selling at 1.70¢ @ 1.75¢, with strong competition for the small orders now coming forward. Spikes are held at 2.10¢ @ 2.15¢, and Hexagon Nut Track Bolts 2.65¢ @ 2.75¢.

Old Rails and Wheels.—Old Iron Rails have been unusually active of late. About 5000 tons changed hands the past week in lots of 500 to 1000 tons. Prices ranged from $19.50 to $19.75. Old Steel Rails are quiet and nominally quoted at $13.50 @ $14. A sale of 300 tons Car Wheels is reported at $15.50.

Scrap.—Consumers further east have been pretty well canvassed by dealers here, but no stock is wanted at present. Such sales as have been made were of a character requiring the utmost watchfulness, as well as a disposition to meet buyers' views. Railroads are now seeking the dealers, and prices are gradually settling to a lower basis. Sales are being made on the following basis, per net ton: No. 1 Railroad, $17; No. 1 Forge, $16; No. 1 Mill, $10.50; Pipes, $10; Cast Borings, $6.75; Wrought Turnings, $9; Axle Turnings, $11.50; Heavy Cast, $11.50; Stove Plate, $9; Malleable Cast, $10; Horse Shoes, $17; Fish Plates, $18.75; Mixed Steel, gross ton, $10.50 @ $11; Coil Steel, $15; Leaf Steel, $16.

Metals.—Copper is steady. Carload lots of Lake are quoted at 12¼¢ @ 12½¢, and casting brands 11.75¢. Spelter is quiet but strong at 4.45¢. Pig Lead has been quiet, but quotations have moved up and 4.12½¢ @ 15¢ is now asked.

W. A. Ahrens, room 6, No. 40 Dearborn street, Chicago, now represents the Whitaker Iron Company, of Wheeling, and Lindsay & McCutcheon, of Pittsburgh, the former manufacturing Black and

Galvanized Sheets and the latter Hoops, Bands, Horseshoe Iron and Strap and T Hinges. Mr. Ahrens has had long experience as a salesman of Iron and Steel in the Western market, and it is a pleasure to note his success in securing the agency for such sterling concerns as those named above.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., April 19, 1892.

A strict adherence to facts permits of no other report than a doleful repetition of those of recent date. There is absolutely nothing that looks like immediate improvement, while there are some things that are even more discouraging than usual. Among these may be mentioned the most profound apathy in regard to Pig Iron, and still lower prices for finished material, all of which betokens an unsettled and irregular market for some time to come. The volume of business has not increased as was expected, and as many of the larger concerns are determined to run as full as possible, prices are necessarily crowded still further down. It would be an agreeable task to point to something of a more encouraging character, but the facts do not warrant anything of that kind, although on general principles business ought to improve, and doubtless will improve, possibly when least expected. Meanwhile there is no new work of importance likely to come on the market, so that competition for what business there is, is likely to be as close as ever. For the present it is the big concerns that are doing all the cutting, and for that matter it is the big concerns that are getting the business; whether it pays or not is another question.

Pig Iron.—Sellers are beginning to feel profoundly disgusted with the entire business. Prices are so low that there is no possible margin for profit, yet the exigencies of the market require a good deal of scheming for any one to hold his trade. Orders are scarce and sellers so numerous, that buyers are beset with offers, under all sorts of pretences, so that whatever price may be named, some one else is always willing to do a little better, or at all events will promise something of that kind. The consequence is that buyers are almost as demoralized as sellers are, until they have about reached a point where they will take nothing but their regular brands, and these they want at the lowest figures quoted for others, in regard to which they have had no experience. They are assured that quality is first class, and while actual business is not done on equal terms, it makes it an exceedingly difficult matter to secure the extra prices which standard brands usually command. As regards the competing Irons, there is hardly any market, unless at prices lower than heretofore quoted. Small lots can be placed at about the figures named below, but there is no demand for large lots, although without making firm offers some of the large consumers are talking $12.50 to $13 for a fair quality of No. 3. As a rule sales have been in small lots at prices about as follows for Philadelphia and near by deliveries (25¢ @ 50¢ less for Southern Irons when delivered at points 100 to 150 miles West and South):

American Scotch, No. 1x	$17.00	@	$17.50
American Scotch, No. 2x	16 50	@	17.00
Standard Penna (Lake Ore), No. 1x	16.00	@	16.50
Standard Penna. (Lake Ore), No. 2x	15.00	@	15.50
Standard Penna. (Lake Ore), No. 2 plain	14.50	@	14.75
Lehigh and Schuylkill, No. 1x	15.75	@	16.00
Lehigh and Schuylkill, No. 2x	14.75	@	15.00
Standard Virginia, No. 1x	15.00	@	15.50
Standard Virginia, No. 2x	14.50	@	15.00
Medium Va. and Southern, No. 1x	15.00	@	15.25
Medium Va. and Southern, No. 2x	14.25	@	14.50
Standard Penna. and Virginia Forge	14.00	@	14 50
Ordinary Forge Cinder mixed	13.00	@	13.25
Hot-Blast Charcoal	18.50	@	21.00
Cold-Blast Charcoal	24.00	@	26.00

Steel Billets.—The market has not shown much recuperative power, and prices are still more or less nominal. The real difficulty is that there is no demand of any importance, so that sellers may as well quote one price as another. The usual quotation for Schuylkill Valley points is $25.25 @ $25.40, and about 50¢ less at Harrisburg and vicinity, but the only sales reported are 100 and 200 ton lots at outside figures. It is intimated that concessions could be had on lots of 500 tons and upward, but bids are scarce, most of the mills having all the material engaged that they are likely to require up to midsummer.

Steel Rails.—Nothing doing in large lots. Mills seem to keep moving as usual, but business is confined to orders of a few hundred tons, and from that up to 2000 or 3000. There is nothing in prospect likely to cause any material change in the position, but manufacturers expect that the current demand will give them a fair amount of work for the summer months.

Bar Iron.—Business shows little or no improvement, and it begins to look as though radical changes will soon have to be made in this, as they have already been made in other departments. The low price of Steel is gradually attracting attention, and it is understood that some leading concerns will soon be rolling Steel for Bars, which is gradually being used as a substitute for Iron. Prices are a trifle less for Steel than for Iron, and some large concerns give it the preference. The demand for Bars of any kind is not large, however, so that it is difficult to maintain 1.70¢ @ 1.75¢ for city deliveries, or 1.60¢ @ 1.65¢, at interior points, and a little less for a nice sized order of Steel Bars.

Plates.—Reports from this interest are not encouraging. Competition is closer than ever, which is equal to saying that prices are lower than ever. In our last report it was mentioned that an order for Ship Plate had been taken at less than 1.9¢, delivered at Buffalo, but we are informed that 1.8¢, if not less, was accepted for both that and the Syracuse order. To-day an order was taken for Philadelphia delivery, which, when specification is taken into account, is at a still lower figure relatively. The fact of the matter is that some makers will undertake to deliver almost any quality that can be specified at from 2.10¢ @ 2 25¢. These are most extraordinary prices for high-test boiler Steel, but they are current nevertheless General quotations are supposed to be about as follows:

	Iron	Steel.
Tank Plates	1.80 @ 1.90¢	1.80 @ 1.90¢
Shell		2.10 @ 2.20¢
Flange	2.70 @ 2.90¢	2.30 @ 2.40¢
Fire-Box	3.00 @ 4.00¢	2.70 @ 3.20¢

Structural Material.—There is nothing beyond the usual movement, and while some of the mills are quite busy, others find it hard work to keep the machinery moving. The season is at hand, however, when greater activity may be expected, both in bridge and structural work, and while there is nothing specially important in sight at the moment, it is hardly possible that the summer can advance far without bringing in a good deal of business in the lines named. Meanwhile prices are irregular, and for desirable orders can be shaded about a half-tenth or thereabouts. General quotations are about as follows: From 1.85¢ to 2¢, delivered, for Bridge Plates; 1.9¢ @ 2¢ for Angles, and 2.20¢ @ 2.30¢ for Beams, Channels or Tees.

Sheet Iron.—There is a pretty good demand for Sheets, especially for those of established reputation, but other descriptions are dull, weak and irregular. The increased demand will probably be still more marked in the near future, as Tin-Plate making appears to be steadily increasing, and may already be regarded as an established industry. Best makes are quoted about as follows:

Best Refined, Nos. 14 to 20	2.70¢	@	2.80¢
Best Refined, Nos. 21 to 24		@	3.10¢
Best Refined, Nos. 25 to 26	3.20¢	@	3.25¢
Best Refined, No. 27	3.40¢	@	.....
Best Refined, No. 28	3.50¢	@	.....

Common. ¼¢ less than the above.

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ½¢ lower than are here named:

Best Soft Steel, Nos. 14 to 20	3¢	@	3⅛¢
Best Soft Steel, Nos. 21 to 24	3⅛¢	@	....
Best Soft Steel, Nos. 25 to 26	3¾¢	@	....
Best Soft Steel, Nos. 27 to 28	4¢	@	....

Best Bloom Sheets, ¼¢ extra over the above prices.

Best Bloom, Galvanized, discount	@	67½ %
Common, discount	@	70 %

Old Material.—Market heavy and prices likewise. The supply is not unusually large, but it exceeds the demand, hence weak and drooping quotations, which are nominally as follows: Iron Rails, $20 asked, spot, or $21, delivered; Steel Rails, $16 @ $16.50, delivered; No. 1 Railroad Scrap, $18 @ $19, Philadelphia, or for deliveries at mills in the interior $18.50 @ $19, according to distance and quality; $13 @ $14 for No. 2 Light; $13 @ $14 for best Machinery Scrap; $13 @ $14 for Wrought Turnings; $9 @ $10 for Cast Borings, and nominally $22 @ $24 for Old Fish Plates, and $16 @ $16.50, delivered, for Old Car Wheels.

Messrs. William S. Pilling and Theron Crane have formed a partnership under the firm name of Pilling & Crane, and will carry on a business of similar character to that recently done by Wm. R. Hart & Co., with whom they were connected. Both these gentlemen are well and favorably known in the trade, and as they will have the benefit of Mr. Hart's experience and counsel so far as his health will permit, they expect to be favored with a large portion, if not all, of the late firm's business. The numerous friends of Mr. Hart will be glad to learn that his health is somewhat improved and it is hoped that with care he will be able to pull through.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, April 19, 1892.

During the week under review the volume of business was even lighter than the previous week, and buying seems to have come almost to a standstill. The present situation is certainly a remarkable one in many respects, and the best posted authorities state that any predictions made as to when we can look for an improvement should be looked upon as merely guess work. In the face of the tremendous production going on in all branches of trade, together with a stock of 760,000 tons of Iron on hand and unsold on April 1, it is a brave man who will venture any opinion as to when we may look for the much-wished-for upward turn. Notwithstanding the great depression which now exists, a fair degree of activity prevails among the mills, and the demand for finished materials continues good and in some lines was never better. It is doubtful if the Wire mills were ever as fully employed as they are at present, and the foundries, especially those making rolling mill castings and tin-plate machinery, are, as a rule, well fixed with orders. It is the general belief that if consumption could be gotten up to a point where it would equal or go ahead of production for a time, we would soon be in better shape. Until this is brought about, either by largely increased demand or restricted

production, it is impossible for the desired improvement to come.

Pig Iron.—Transactions during the past week were confined exclusively to lots ranging from 100 to 500 tons, and the number of these was exceedingly small. The market is in such a deplorable condition that it seems suicidal for furnaces to keep on turning out a large output and adding rapidly to the enormous stocks now on hand. We doubt if there is a furnaceman making Iron to-day who will not say frankly that a shut-down is absolutely necessary, but to find the man who will say that he is the one who should make the initiative move in that direction is another thing. In the case of some of the furnaces they are not in a position to close down, but are compelled to keep going and also to market their product, even should they do so at a loss. Their eagerness to secure business naturally has a tendency to depress the market and keep prices down to the lowest notch. Since our last report there have been transactions in Bessemer at prices which were not made public, but which were stated to be considerably less than $14.50. A few sales of Gray Forge Iron are reported, but in all cases buyers and sellers absolutely refuse to make public the terms. These "private deals" have a bad effect on the market, as they start rumors afloat that in many cases are seized upon by prospective buyers who demand that their orders be placed at just as low prices as those that may be named in such reports. There is a very wide range of prices on Pig Iron to day, but the market may be fairly quoted as follows:

Neutral Gray Forge	$12.75	@ $12.90,	cash
White and Mottled	12.50	@ 13.00,	"
All-Ore Mill	13.25	@ 13.50,	"
No. 1 Foundry	14.75	@ 15.00,	"
No. 2 Foundry	14.00	@ 14.25,	"
Bessemer Iron	14.40	@ 14.50,	"
Warm-Blast Charcoal	18.50	@ 20.00,	"
Cold-Blast Charcoal	25.00	@ 27.00,	"

The open market for Bessemer Iron is $14.50, but a fair sized order would no doubt shade this from 10¢ to 15¢.

Ferromanganese.—There is no change to note since our last report. Domestic continues to be quoted at $62.50, with a limited amount of sales going.

Soft Steel Billets.—Pittsburgh makers have been shaken up recently by an Eastern concern, who turned their Rail mill on Billets and have made sales to the amount of 30,000 or 40,000 tons to consumers who had always heretofore bought in Pittsburgh or Wheeling. It is understood that these sales were based on prices that meant less than $22.50 in Pittsburgh. The sales were made to Eastern parties, and favorable freight rates allowed the business to be taken from Pittsburgh. Outside of the above, the market does not show any change from that noted last week, with the exception that prices are a shade weaker in the absence of business. We quote nominally at $23, but a good buyer with a good order to place could do better than that price.

Muck Bar.—The demand continues very light and prices do not show any improvement. We are not advised of any transactions of note since our last report, and quote nominally at $25, delivered at buyers' mill.

Wire Rods.—The market does not seem to be holding its own. We quote a transaction involving some 2000 tons for shipment West at a price equal to about $31.50 at mill. There were some unusual conditions attached to this sale, and it should be stated that this price does not correctly represent the present condition of the market. We quote nominally at $32 at mill. Through a typographical error last week our quotation was given at $34.50. It should have read $32.50.

Steel Plates.—A very fair business is going and mills, as a rule, are pretty fully employed. One of our largest makers here induced their customers to anticipate their wants for a considerable period, and as a result this mill is pretty comfortably fixed as regards business. Prices do not show much change and we quote as follows: Fire Box, 3.50¢ @ 4¢; Flange, 2.25¢ @ 2.30¢; Shell, 2.10¢; Tank, 1.90¢.

Structural Material.—Quite an improvement in demand is reported and the outlook is very good. As yet orders are confined almost entirely to small lots, but several good-sized contracts are in view and will no doubt be placed within the next month. Beams and Channels are now obtainable at about $25 ℔ ton less than they were some months ago, and this will undoubtedly lead to a much larger consumption. Prices do not show any improvement and we quote as follows: Beams and Channels, on a basis of 2¢ for desirable orders and 2.15¢ small lots; Angles, 1.85¢ @ 1.90¢; Universal Mill Plates, Iron, 1.90¢ @ 1.95¢; Universal Mill Plates, Steel, 1.85¢ @ 1.90¢; Tees, 2.50¢; Refined Iron Bars, 1.75¢; Steel Bars, 1.75¢.

Steel Rails.—Nothing out of the ordinary has transpired since our last report, and prices are said to be firmly maintained at $30, f.o.b. at mill. It is the opinion of many in the trade that the Steel Rail makers will not be able to maintain a difference of $7 ℔ ton between Rails and Billets when it costs nearly the same to make one as the other.

Wire and Cut Nails.—An active demand for both Cut and Wire Nails is reported. In Cut Nails the improvement in demand is particularly noticeable, and we understand that two or three of the Wheeling mills are pretty well fixed with orders. Prices are unchanged, and we quote $1.50 for 30¢ averages, f.o.b. in Wheeling district. Wire Nails are quoted at $1.65 in carload lots and $1.70 and $1.75 in less quantities.

Barb Wire.—In spite of the heavy demand, prices are unchanged, but makers insist that if business keeps to its present heavy volume an advance is bound to come. We repeat our quotations of last week as follows: $2.25 and $2.35 for Painted, and $2.70 and $2.80 for Galvanized, f.o.b. at factory, the lower prices named being for carload lots.

Manufactured Iron.—As a rule the mills are pretty fully employed, although buyers continue to confine their orders to small lots. Competition for business is keen and the advantage continues with the buyers. Mills making railway furnishings are well fixed with orders and are running to their utmost capacity. Prices are unchanged and we quote as follows: No. 1 Bars at 1.60¢, 60 days, 2 % off for cash. Bars made from Old Rails at 1.47½¢ @ 1.50¢; Steel Sheared Plates at 1.90¢ @ 2¢; Iron Sheared Plates at 1.80¢ @ 1.90¢; No. 24 Sheet at 2.50¢ @ 2.60¢, 60 days, 2 % off for cash. Skelp Iron is unchanged at 1.60¢ for Grooved and 1.80¢ for Sheared, four months, 2 % off for cash.

Wrought-Iron Pipe.—The improved demand noted in our last report continues, and as a consequence a much better feeling prevails. We are advised that two of our largest makers have recently booked some good sized orders. Should the improved demand hold out a firmer feeling in prices will probably follow. Discounts are unchanged and are as follows: Butt, Black, 57½ %; Galvanized, 47½ %; Lap, Black, 67½ %; Galvanized, 55 %; Boiler Tubes, up to 2¼ inches, inclusive, 55 %; 3 inches and larger, 65 %; Casing, 55 %; Inserted Joint Casing, 50 %. These discounts continue to be shaded considerably.

Merchant Steel.—A fairly good demand is reported, especially for the cheaper grades of Steel, and, with the opening up of good weather, the demand will undoubtedly increase. Some of our concerns here, whose product has a national reputation, seem to have no difficulty in booking enough orders to keep them fully employed all the time. We quote Tool Steel from 6½¢ upward, according to grade, and Bessemer Machinery and Tire Steel from 2¢ up to 2.40¢, according to quality.

Railway Track Supplies.—Mills making Rail Fastenings are well supplied with orders, and some of them have their product sold up for some time. We make no change in prices and quote as follows: Spikes of standard size, 2.15¢, 30 days; Iron Splice Bars, standard sections, 1.75¢ @ 1.80¢; Steel Splice Bars, 1.80¢ @ 1.90¢; Track Bolts, 2.70¢ with Square and 2.80¢ for Hexagon Nuts.

Scrap Iron and Steel.—The limited amount of business going for some time past has had the effect of causing prices to decline very fast. We have therefore made considerable reductions on some lines of both Iron and Steel Scrap, and quote as follows: No. 1 Railroad Wrought Scrap, $17 ℔ net ton; Cast Scrap, $12.50 @ $12.75 ℔ gross ton; Billet and Bloom Ends, $16.75 @ $17; Cast-Iron Borings, $9.50 ℔ gross ton; Mixed Country Steel, $14 ℔ gross ton; Railroad Coil Springs, $18.50 ℔ gross ton; Leaf Springs, $20.50 per gross ton. We note a sale of 200 tons of Railroad Coil Springs at $20.50 ℔ gross ton, and also a sale of 200 tons of Leaf Springs at $20.50 ℔ gross ton.

Old Rails.—The market is in bad shape, and prices have gone off considerably since our last report. Buyers and sellers are very far apart, and as a result there is absolutely nothing doing. We make nominal quotations as follows: Short lengths under 6 feet which do not require sorting at $16. Miscellaneous lengths are held at $15.75, and long lengths $16.25 @ $16.50. Old Iron Rails may be quoted at $21, delivered in the Mahoning Valley.

The offices of Moorhead, Brother & Co., proprietors of the Vesuvius Iron and Nail Works, at Pittsburgh, have been removed from 64–66 Anderson street, Allegheny, to rooms 300–303 German National Bank Building, Wood street and Sixth avenue, Pittsburgh, Pa.

The Pittsburgh offices of the National Tube Works Company have been removed from rooms 200–206 Lewis Block, Pittsburgh, to the sixth floor of the Fidelity Building, on Fourth avenue in that city.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, April 20, 1892.

Pig Iron.—The Iron market has apparently become more settled. Prices have reached so low a point that the furnaces refuse to accept any lower prices, and when buyers are convinced of this they make no complaint, for Pig Iron is so cheap that any one in need of it does not hesitate to buy. There is no large buying, but some increase in the volume of consumptive orders, and prices are without essential change, except that Mottled Neutral Coke Iron is ruling a little lower, 2000 tons having been sold at $8.50 at the furnace. The sales for the week were mainly of Nos. 1, 2 and 3 Foundry Iron and considerable Forge Iron. The bottom price for Gray Forge is $9 at the furnace. Parties recently returned from the South report the furnaces firm in

the determination to make no further concessions, but there is much Iron contracts ahead and many applications to have deliveries delayed. Agents here report only moderate applications of this kind. There is still a good demand for Charcoal Car-Wheel Iron, with only moderate supplies available, and very full prices are obtained for these. The lower grades of Charcoal Iron are plenty and dull. The consumption of Pig Iron is fairly satisfactory; it would be considered large if the supply was not excessive. The Iron-Pipe works here have increased their melting of Iron, but are not yet running to their full capacity; stove works are running light, but other Iron consumers are melting Pig Iron quite to the usual extent and some of them liberally. No immediate improvement in the trade is anticipated, and buyers can secure Iron for almost any delivery they desire not beyond this year at current prices, but early deliveries are desired by sellers. Quotations are as follows:

Foundry.

Southern Coke, No. 1	$13.75 @ $14.00
Southern Coke, No. 2	13.00 @ 13.25
Southern Coke, No. 3	12.25 @ 12.50
Ohio Soft Stone Coal, No. 1	16.00 @ 16.50
Ohio Soft Stone Coal, No. 2	15.00 @ 15.50
Mahoning and Shenango Valley	17.00 @ 17.50
Hanging Rock Charcoal, No. 1	19.75 @ 20.00
Hanging Rock Charcoal, No. 2	19.00 @ 20.00
Tennessee and Alabama Charcoal, No. 1	16.50 @ 17.00
Tennessee and Alabama Charcoal, No. 2	15.50 @ 16.00

Forge.

Gray Forge	11.75 @ 12.00
Mottled Neutral Coke	11.25 @ 11.50

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	19.25 @ 19.50
Lake Superior Car Wheel and Malleable	18.75 @ 19.00

Cleveland.

CLEVELAND, Ohio, April 18, 1892.

Iron Ore.—Navigation has practically opened, but no new Ore has thus far been unloaded on the lower lake docks. In the meantime Ore is being rushed through from the docks to the furnaces at break-neck speed. The shipments from Cleveland for the past week aggregated 31,000 tons and from all Lake Erie ports about 108,000 tons, as compared with 8000 tons from Cleveland and 35,000 tons from all lower lake ports last year. The shipping season of 1892 will begin with the docks almost free of Ore—something that has not occurred in many years. The market is, of course, dull. With the Pig Iron market so depressed nothing else could be expected. There is no demand and if 50,000 tons of new Ore were to be sold to-day, the price would, of necessity, be very close to last year's quotations. Very few charters are now being made, and it is very doubtful if the 25¢ advance in the Ore carrying rate announced early in the season could now be obtained. One of the heaviest dealers in the city said to-day that the sales of Ore for 1892 already made would not exceed 3,750,000 tons. Another dealer placed the amount now contracted for at 4,150,000 tons. This would seem to indicate that 4,000,000 tons would be a fair estimate of the early season sales. Local Ore men were interested in the statement in last week's *Iron Age* concerning the sale of foreign Ores for the furnaces in the Lehigh and Schuylkill valleys, although they do not profess to believe that these transactions will seriously interfere with their own business. No sales of any consequence are reported for the past week. There are rumors of charters on the basis of $1 @ $1.10 from Ashland and Two Harbors to Cleveland and other Lake Erie ports, but these have not been confirmed. It can be said, however, that it would be considered a very unwise action from a business standpoint for an Ore dealer to contract at the present time to pay a higher rate for bringing down Ore that was demanded or paid in 1891. Few developments of interest are expected before May 15, when a change for the better is anticipated.

Pig Iron.—The market is completely lifeless and prices seem less firm than ever, although in view of the condition of trade for the past month that statement may seem to have no significance. No sales of any consequence are reported and the demand amounts to nothing. Foundry Irons have just a semblance of life, but Bessemer and Gray Forge Irons are, if anything, weaker than last week. Following are the surface quotations, although they must not be taken as an indication of the prices at which Iron can actually be bought:

Nos. 1 to 6 Lake Superior Charcoal	$17.50 @ $18.00
Nos. 1, 2 and 3 Bessemer, per ton	15.00 @ 16.00
No. 1 Strong Foundry, per ton	15.50 @ 16.00
No. 2 Strong Foundry, per ton	14.50 @ 15.00
No. 1 American Scotch, per ton	@ 15.60
No. 2 American Scotch, per ton	@ 14.60
No. 1 Soft Silvery, per ton	15.50 @ 16.50
Mahoning and Shenango Valley Neutral Mill Irons, per ton	13.50 @ 14.00
Mahoning and Shenango Valley Red Short Mills, per ton	14.00 @ 14.50

Nails.—Prices are unchanged, but the demand is steadily improving, especially for Cut Nails. Steel-Wire Nails are also gaining in favor.

Barb Wire.—The mills report plenty of business, with prices firm.

Old Rails.—The market is dull, and only one or two small transactions are reported. These were on the basis of $20.50 @ $21 for Old Americans.

Scrap Iron.—Only a small amount of business is being done, although there is an improvement over the condition of the market last week. No. 1 Railroad Wrought is quoted at $18 @ $18.25; Cast Scrap at $12.50 @ $13, and Steel Rails and Bloom Ends at $17.25 @ $17.75.

Louisville.

LOUISVILLE, KY., April 18, 1892.

On basis of present prices sales are being made for delivery throughout the year, and transactions of some moment have taken place. This indicates that it is not felt that there will be any improvement in the market this year, but both producers and consumers may be in error in this respect, as frequently in Iron transactions during the past two or three years the unexpected has happened. There has not been heavy buying on the part of railroads yet and the improvement in this respect will help the situation very much. The going out of blast of a number of furnaces has curtailed production to an extent that the increase of stocks last month was but 20,000 tons, and if the furnaces had stopped making Iron earlier in the month there would probably have been shown little or no increase. It is believed that the report for the present month will indicate that consumption is in line with present production. Car wheel companies report considerable business, but rolling mills state that orders have fallen off sharp and they are not selling as freely as in the past, and prices are upon an extremely low basis. Car wheel Irons continue low, with offerings at prices showing no advance over the extreme low figures that have been prevailing. It is thought that in the Southern district the situation is improving; cotton is moving more freely and indicates a higher range of values, so that it is thought that from the South the tendency to buy more largely of Pig Iron than in the past is evident, owing to the improvement resulting from cheap money and the general situation. We quote for cash, f.o.b. cars, Louisville:

Southern Coke, No. 1 Foundry	$13.75 @ $14.25
Southern Coke, No. 2 Foundry	12.75 @ 13.25
Southern Coke, No. 3 Foundry	12.00 @ 12.50
Southern Coke, Gray Forge	11.50 @ 12.00
Southern Charcoal, No. 1 Foundry	15.75 @ 16.75
Southern Car Wheel, standard brands	18.00 @ 19.00

Detroit.

WILLIAM F. JARVIS & Co. of Detroit, Mich., under date of April 18, 1892, write: The activity noted in our last report still continues, and several large deals have been consummated. From the inquiries received and the widely separated points from which they come the fact is demonstrated that buyers of Lake Superior Charcoal, particularly in the East, are in need of Iron much earlier than usual, as they generally buy stocks sufficient to last them until about June. This would indicate increased sales this year over last. It now looks as if the tonnage would be large, and were it not for the amount of stocks on hand higher prices would undoubtedly rule. The makers of Lake Superior Charcoal are not willing to reduce their present figures, but it is reported that some sales of Southern have been made at lower prices than at any previous time. We are able to report an active market and repeat our quotations:

Lake Superior Charcoal, all numbers	$16.50 @ $17.50
Lake Superior Coke, Bessemer	16.00 @ 17.00
Lake Superior Coke Foundry, all ore	16.50 @ 17.00
Ohio Blackband (40 per cent.)	17.00 @ 17.50
Southern No. 2	15.00 @ 15.50
Southern Gray Forge	13.25 @ 13.75
Jackson County (Ohio) Silvery	17.75 @ 18.25

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, April 20, 1892.

Pig Iron.—New business on the whole is light and the bulk of it is captured by those who must sell to keep going. This is notably true of some of the Southern furnaces, although the leading companies allow business to go rather than meet the views of buyers. We quote Northern brands, $15.75 @ $16 for No. 1; $14 75 @ $15 for No. 2, and $13.75 @ $14 for Gray Forge, tidewater. Southern Iron sells at $15 @ $15.50 for No. 1; $14.25 @ $14.50 for No. 2 and No. 1 Soft; $13.50 @ $14 for No. 2 Soft; $13 @ $13.50 for Gray Forge.

Spiegeleisen and Ferromanganese.—Small quantities of foreign Spiegeleisen have been sold at private terms. Ferromanganese is dull. We quote nominally $23 @ $23.50 for 10 to 12 %, $26.50 @ $27 for 20 % Spiegeleisen, and $61 @ $61.50 for Ferro.

Billets and Rods.—It is reported that a Wire mill in Eastern Pennsylvania has recently bought 10,000 tons of Billets from the Maryland Steel Company. Rods are dull. Nothing is doing in foreign material. We quote domestic Billets $25.50 @ $26, and domestic Rods $35.50 @ $36, tidewater.

Steel Rails.—New business is light, so far as the Eastern Rail mills are concerned. The rolling of Billets by the Maryland Steel Company is regarded as significant. The report of sales up to April 1, to which we allude editorially, turns out to be a little better than expected, the total footing up nearly 700,000 tons. We continue to quote standard sections $30 at Eastern mill. Light Rails may be quoted $30 @ $30.75 at mill.

Manufactured Iron and Steel.—Reports of sellers are conflicting Some have a good amount of work booked, others are still slack. On the whole, however, there is a good deal coming out and considerably more is expected. The order for the iron work of the Buffalo shops of the New York Central, amounting to about 1500 tons, has not yet been placed. We note a sale of about 1000 tons of Western Beams, the greater part thereof for the South Boston Sugar Refinery. Some moderate sized Plate orders have been taken, but prices continue very low. Small lots

of Beams are selling at 2.40¢ @ 2.45¢, while round lots are available at 2.20¢ @ 2.30¢. We quote: Angles, 1.9¢ @ 2.10¢; Sheared Plates, 1.85¢ @ 2.25¢; Tees, 2.40¢ @ 2.75¢, and Beams, 2.30¢ @ 2.80¢; Channels, 2.25¢ @ 2.50¢, on dock. Car Truck Channels, 2¢ @ 2.10¢; Steel Plates are 1.85¢ @ 1.95¢ for Tank; 2.05¢ @ 2.25¢ for Shell; 2.35¢ @ 2.65¢ for Flange; 2.55¢ @ 2.75¢ for Marine, and 3¢ @ 3.25¢ for Fire Box, on dock. Bars are 1.7¢ @ 1.9¢, on dock. Scrap Axles are quotable at 2¢ @ 2.10¢, delivered. Steel Axles, 2¢ @ 2.1¢, and Links and Pins, 2.05¢ @ 2.20¢; Steel Hoops, 1.9¢ @ 2¢, delivered.

Merchant Steel.—We quote: Hot-Rolled Shafting, 1.90¢ @ 2¢; Machinery, 1.90¢ @ 2.10¢; Tire, 2¢ @ 2.25¢, Toe Calk, 2.20¢ @ 2.35¢, and Tool Steel, 5½¢ @ 6½¢, delivered.

Track Material.—We quote Spikes 1.95¢ @ 2¢, Angles remaining nominally 1.65¢ @ 1.70¢, and Bolts, 2.60¢ @ 2.5¢, delivered.

Metal Market.

Copper.—The demand for Wire Bars has been the most prominent feature of the market during the past week. For this class of material the inquiry has reflected some urgency in consumers' requirements, as on actual sale prompt deliveries brought ¼¢ ℔ lb premium over prices at which orders were subsequently entered for deliveries six weeks hence. Thus the best part of 250,000 lb have been taken at 12¾¢ for prompt delivery, while contracts involving June delivery were subsequently entered at 12½¢. This evidence of heavy consumption for electrical purposes is of more than ordinary significance, and, in connection with liberal use of the Metal in other directions gives tone to the market for Lake Superior product in the face of uncertainties connected with the alleged proposed international agreement for regulation of the world's production. Of Lake Superior Ingot the sales have been moderate and the demand for the same has dragged, but producers concede little, if anything, from 12¢, and outside parcels at less than 11.90¢ are the exception. The general impression is that there will be a livelier movement ere long and better prices unless present indications as to consumptive requirements are greatly at fault. Rumors have had circulation of a shut down at the Anaconda works, but these appear to have been based upon a temporary stoppage for repairs, and are offset by the official announcement that there is no intention of dropping out. For the present common casting brands are quoted at 11¾¢ @ 11½¢ and Arizona Ingot at 11¾¢, but consumers are shy in view of the close proximity of those prices to prevailing rates for Lake Superior Ingot, and purchases are made only as imperative wants dictate.

Pig Tin.—There has been an advance of ¼¢ ℔ lb in prices during the past week, and operators prominently identified with the rise are bolder, if anything, in bidding for both prompt and future deliveries than they were a week ago. In short, the "bull" element seem to be carrying everything before them. The heavy supplies in this and the English market would appear to be well under their control, while the comparatively light shipments from the straits during the first half of the month (900 tons all told) in connection with the aggressive movements on the part of the "bulls" seem to have awakened interest among consumers, besides forcing the "shorts" to cover. Nearly, or quite, 500 tons have changed hands, speculatively and otherwise, during the week, deliveries running from spot to June inclusive, at from 20¢ up to 20¼¢. The latter price was bid for deliveries any month to December inclusive, in lots of 10 to 25 tons per month on Tuesday. Following that came purchases of about 50 tons at 20.65¢ for April to August delivery, and at the close spot prices were 20.60¢ bid, 20¾¢ asked, net cash, for 10-ton lots.

Pig Lead.—In this market purchases have been unimportant the past week, and buyers have held aloof, as though inclined to contest the strong position assumed by sellers. While there is thus the condition commonly termed a "stand-off," the market shows at least superficial strength, with some evidence that sellers are not inclined to retreat under ordinary opposition. Single carload lots have been placed at 4.30¢ during the past few days, and larger blocks brought 4 27½¢, which prices are apparently bottom ones at the present time. The consumption is represented as being fully up to the average for the season, particularly in the corroding line.

Spelter.—The market is very firm at the highest prices quoted last week. Smelters derive a certain amount of courage from the fact that there are still some export inquiries, and apparently concern themselves very little about the possibility of the metal being returned to this side of the Atlantic in the event of the foreign market proving to be unsatisfactory. Home trade demand is fair, but neither galvanizers or brass manufacturers are buying in excess of well-denned wants. There is very strong evidence, however, that home consumption is on a larger scale now than it was a month ago, and that consumers are carrying none too much stock.

Antimony.—Aside from about the routine purchases by consumers, there is little going on at present, and values remain without important change. Current quotations are 10¾¢ for Hallett's, 12½¢ for LX and 14¾¢ for Cookson's, and 13¢ for "Crown" brand.

Tin Plate.—The market has been devoid of new feature. A fair amount of spot business is noted, but the buying was fitful and not of sufficient volume to have any bearing upon values in the absence of decided turn in the foreign market. Future deliveries have also been quiet, and in that line values have barely held their own. Cable advices state that very little was done at the Birmingham quarterly meeting, and that stocks are still accumulating at British shipping ports. We quote as follows for full weights: Coke Tins—Penlan grade, IC, 14 x 20, $5.25; J. B. grade, do., $5.35; Bessemer do., $5.30; Siemens Steel, $5.37½. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60 @ $5.65; Siemens Steel, IC basis, $5.75 @ $5.80; IX basis, $6.80. IC Charcoals—Melyn grade, ½ X, $6.40; for each additional X add $1.50; Allaway grade, $5.75; Grange grade, $5.85; for each additional X add $1.20, Charcoal Ternes — Worcester, 14 x 20, $5.75; do., 20 x 28, $11.30; M. F., 14 x 20, $7.37½; do., 20 x 28, $14.75; Dean, 14 x 20, scarce; do., 20 x 28, $10.80; D. R. D. grade, 14 x 20, $5.35; do., 20 x 28, $10.40; Mansel, 14 x 20, scarce; do., 20 x 28, $10 50; Alyn, 14 x 20, $5.40; do., 20 x 28, $10.60; Dyffryn, 14 x 20, $5.65; do., 20 x 28, $10.90. Wasters—S. T. P. grade, 14 x 20, scarce; do., 20 x 28, $10; Abercarne grade, 14 x 20, $5; do., 20 x 28, $9.80.

The Crooke Smelting and Refining Company have located their principal office at 22 Burling Slip, New York.

The Pittsburgh Bridge Company are erecting a bridge over the Conemaugh River, at Conemaugh, Pa., for the Pennsylvania Railroad. It will be made in two spans, each 176 feet in length.

Financial.

Though the discussion concerning the free coinage of silver has been eliminated from disturbing influences so far that speeches on the subject attract scarcely any attention in Congress, silver in its relations to trade and finance is a prominent factor. As related to the future value of investments it is doubtless of the first importance, as shown by Henry Clews. The defeat of free coinage, in his judgment, "saves the country from the worst form of bad faith." The return of American securities from Europe was attributed, in large part, to apprehension that they might become payable in depreciated silver, and now that this fear is removed a renewed demand for our investments is a natural consequence. The proposition to repeal the Silver act of 1890, or so much of it as provides for purchases of silver bullion at the rate of 4,500,000 ounces per month, is before the House in at least two bills, but is not likely to be acted on.

Mint Director E. O. Leech, in his report just submitted to Congress on the production of precious metals during the last calendar year, shows the product of gold from the mines of the United States aggregated 1,604,840 fine ounces, of the value of $33,175,000, which is an increase of $330,000 over the product of the previous calendar year.

The product of silver from our mines was 58,330,000 fine ounces, of the commercial value of $57,630,040, an increase of 3,830,000 ounces over the prior year.

At the date of the passage of the act of July 14, 1890, the price of silver was $1.07¼. The lowest point touched was on March 28, 1892, $0.85½. At the lowest price of silver during the year the commercial value of the pure silver contained in the silver dollar was $0.73½; at the highest price, $0.826, and at the average price $0.764. At the price of silver March 28, 1892, the commercial value of the pure silver in the dollar was $0.66.

The stock market was generally strong, a further rise in the coal shares being a leading feature, with the largest transactions in Reading, Central New Jersey, Cotton Oil, Lake Shore, Richmond Terminal and New York and Ontario and Western. The principal explanation of the net advance of nearly 6 % in the price of Reading is the possibility of the Delaware and Hudson Canal Company coming into closer accord with the other anthracite companies. On Tuesday, however, Reading declined several points, due to a report that the Pennsylvania Railroad will at once reduce coal tolls from the mines to tidewater about 40 %, thus inaugurating a war. At the close the Richmond Terminal scheme still hangs fire.

United States bonds closed as follows:

U. S. 4½s, 1891, extended	100
U. S. 4s, 1907, registered	115⅞
U. S. 4s, 1907, coupon	115⅞
U. S. currency 6s	109

The sales of State bonds were $4000 Tennessee settlement 3s at 70 and $1000 do. 6s at 107½.

Bar silver closed in London at 39½d. per ounce. The commercial price of bar silver in New York was 86½¢ per ounce.

Sterling exchange was weaker and posted rates were reduced to $4.86 @ $4.88.

The associated bank statement was not especially important, showing a loss in surplus reserve of only $50,700, which reduces the amount held in excess of legal requirements to $15,788,500. Loans were expanded $2,753,700, and deposits increased $3,825,200. Money was easy and loaned at the lowest rates. Some of the banks sought to obtain 2½ % on call, but the majority were satisfied with 2. The market for time money was abundantly supplied, and on choice collateral contracts

were offered at 2 % for 30 days, 2½ for 60 days, 3 for 90 days to four months, and 3½ for five to six months. But on ordinary collateral borrowers were willing to pay about ½ of 1 % above these rates. Commercial paper was in demand.

Imports to new York are extraordinary in amount, while exports of provisions and oil show a large decline, but taking the leading commodities together the aggregate exports from the United States for nine months compare with last year year, as follows:

	Nine months, 1891.	Nine months, 1892.
Breadstuffs	$85,252,926	$233,159,912
Cotton	249,892,962	223,244,814
Provisions	103,762,490	95,949,596
Mineral oils	39,883,646	33,669,525
Aggregate	$478,792,024	$586,023,847

An analysis of the export figures in detail shows that but for the shortage in European crops, to be made good on this side of the Atlantic, our foreign trade would afford little ground for complacency.

St. Louis.

Office of *The Iron Age*,
Bank of Commerce Building,
ST. LOUIS, April 18, 1892.

Pig Iron.—The market has been fairly active during the past week. Sales have not averaged much over 500 ton lots, but consumers are evincing more interest in the market than they have for some months past. Buyers do not seem disposed to anticipate their wants, however, and are still of the opinion that the market will go even lower than it is at present. Notwithstanding the curtailment of production, stocks have been largely increased and with this condition of affairs before the trade, it seems that higher prices are as far distant as ever. Prices as quoted herewith do not mean the exact prices at which Iron can be bought, as furnacemen appear willing to share them when a consumer is undecided whether to buy or not. The immediate future does not contain anything of an encouraging nature, and unless the demand improves very much, it seems more than probable that a lower range of prices will ensue. Foundry Irons are in fair demand at about the prices quoted below, but on good round orders these prices could be shaded somewhat. For ordinary quantities we quote as follows for cash, f.o.b. St. Louis:

Soutnern Coke, No. 1 Foundry,	$14.25 @ $14.50
Southern Coke, No. 2 Foundry,	13.50 @ 14 00
Southern Coke, No. 3 Foundry,	12 75 @ 13.25
Gray Forge	12.50 @ 12.75
Southern Charcoal, No. 1 Foundry	16 50 @ 17.00
Southern Charcoal, No. 2 Foundry	15.75 @ 16.25
Missouri Charcoal, No. 1 Foundry	14.75 @ 15.25
Missouri Charcoal, No. 2 Foundry	14.25 @ 14.50
Ohio Softeners	17.25 @ 17.50

Bar Iron.—Prices do not improve any, and the demand is not so strong as it was one week since. Mills quote car lots at East St. Louis, 1.60¢ half extras. Lots from store are quoted at 1.65¢ @ 1.70¢, according to quantity.

Barb Wire.—Mills are kept well employed. The Texas trade is particularly heavy on account of the low freight rate at present prevailing. The local demand is also strong, so that mills have no reason to complain. Prices fail to improve, however, and are quoted as follows: Car lots of Painted, $2.40 @ $2.45; Galvanized 45¢ ℔ cwt. additional; less than car lots 10¢ ℔ cwt. additional.

Wire Nails.—The change in the list of extras has unsettled the market somewhat The demand is only fair, and prices do not show any great strength. Car lots are quoted at from $1.80 to $1.85. Less than car lots 10¢ ℔ cwt additional. The local market was temporarially demoralized during the early part of last week, by a local jobbing house offering Nails at from 15¢ to 20¢ ℔ keg lower than the best prices obtainable up to that time. The price quoted, however, was an error, and the wires and mail were unsparingly used to withdraw the quotations, but a number of shrewd buyers had taken advantage of the price and ordered quite freely. Somebody will suffer, but who it will be will come as the sequel to the story.

(By Telegraph.)

Pig Lead.—The market has ruled very strong during the past week. Sales of from 700 to 800 tons have been made during the past four days at 4.10¢. The demand is strictly legitimate, and consumers who considered this metal dear at 3.85¢ are now anxious to place their orders. As this dispatch is being written, the market maintains a firm front, and a still further advance seems probable.

Spelter—Has surprised every one by its strength. The large sales made for export have apparently cleared up all the surplus stocks, and consumers find a market with practically no stock to draw on. The extremely heavy rains of the past two weeks have interfered with the mining for Ore, and this fact coupled with sales for export account has caused a sharp advance. Sales were made to-day at 4.45¢, with bids at this figure, while 4.50¢ is asked. The market is decidedly firm, and higher prices are predicted. A natural reaction is in order, however, and may ensue.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, April 20, 1892.

Prices for Pig Iron warrants have ruled a shade higher. Scotch sold at 41/3 @ 41/6, Cleveland at 38/3 and Hematite at 48/. Business has been light, owing to the Easter holidays, but continued withdrawals of supplies from stores give the market tone. The stock of Scotch has been reduced to 479,000 tons and that of Cleveland to 121,000 tons, a reduction of 3000 tons and 8000 tons respectively durthe past week. Only five Cleveland furnaces are blowing—three on Hematite and two on Spiegeleisen. Cleveland make suspended, as Durham miners have decided to continue their "strike."

Inactivity that characterized the Pig Tin market prior to the Easter holidays has been followed by considerable excitement and prices have advanced £1. 10/. Shipments of only 900 tons from the Straits during the past fortnight caused some anxiety among the "short" interest by activity on the part of leading holders are is chiefly responsible for the advance.

In Copper there has been some improvement, with a large turnover of warrants and good purchases for consumption, but operations are still checked more or less by the uncertainties surrounding the out come of the proposed limit to production.

The Tin Plate market is somewhat adversely influenced by uncertainty of matters in the United States connected with the proposed reduction in duty, sellers being very cautious on that account. American demand fair, Russians buying to some extent. The quarterly meetings were dull, owing to general depression.

The steel trade remains quiet and without sign of immediate improvement. Wages have been reduced 10 per cent.

Scotch Pig Iron.—There is no change in the character of demand and prices remain about the same as they were last week:

No. 1 Coltness,	f.o.b.	Glasgow	53/6
No. 1 Summerlee,	"	"	52/
No. 1 Gartaberrie,	"	"	51/
No. 1 Langloan,	"	"	52/
No. 1 Carnbroe,	"	"	44/
No. 1 Shotts	"	at Leith	52/
No. 1 Glengarnock,	"	Ardrossan	50 6
No. 1 Dalmellington,	"	"	47/6
No. 1 Eglinton,	"	"	47/

Steamer freights, Glasgow to New York, 1/; Liverpool to New York, 7/6.

Cleveland Pig.—Dealings are still moderate, but light production sustains values, and makers now quote at 38/3 for No. 3, f.o.b. Middlesborough.

Bessemer Pig.—Business has improved, but owing to light output makers have advanced their prices to 49/6 @ 50/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Spiegeleisen.—No change in this line. Business still moderate. English 20 % quoted at 77/6, f.o.b. shipping port.

Steel Rails.—There is little doing and former prices are asked. Heavy sections quoted at £4 @ £4. 2/6, f.o.b. shipping port.

Steel Blooms.—Market quiet and without change. Makers ask £4 for 7 x 7, f.o.b. shipping point.

Steel Billets.—A rather slow market and prices barely steady. Bessemer, 2½ x 2½ inches, quoted at £4. 5/, f.o.b. shipping point.

Steel Slabs.—Demand light, but former prices asked. Bessemer quoted at £4. 5/, f.o.b. at shipping point.

Old Iron Rails.—The market very slow, and prices in buyer's favor. Tees quoted at £2. 15/ and Double Heads at £2. 17/6 @ £2. 18/9, f.o.b.

Scrap Iron.—Only a moderate business and prices rather weak, but not lower. Heavy Wrought Iron quoted at £2. 10/ @ £2. 12/6, f.o.b.

Crop Ends.—Market dull and unchanged. Bessemer quoted at £2. 12/6 @ £2. 15/, f.o.b.

Manufactured Iron.—No change the past week. Business slow and prices rather weak. We quote, f.o.b. Liverpool:

	£ s. d.		£ s. d.
Staff. Ordinary Marked Bars	8 10 0	@	
" Common "	6 7 6	@	6 10 0
Staff. Bl'k Sheet, singles	7 16 0	@	.....
Welsh Bars (f.o.b. Wales)	5 10 0	@	.....

Tin Plate.—The market is unchanged. Business moderate and prices rather easy. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	14/ @ 14/3
IC Bessemer Steel, Coke finish	12/3 @ 12/6
IC Siemens " " "	12/6 @ 12/9
IC Coke, B. V. grade 14 x 20	12/3 @ .....
Charcoal Terne, Dean grade	12/ @ 12/3

Pig Tin.—The market closes strong, with active movement for the day in both spots and futures. Straits quoted at £93. 5/, spot, and £93. 10/ for three months.

Copper.—Prices a trifle off at the close and demand moderate. Merchant Bars quoted at £46. 2/6, spot, and £46. 12/6, three months' futures. Best selected, £50.

Lead.—Business fair and the market steady at £10. 12/6 for Soft Spanish.

Spelter.—The market has undergone no change. Sellers at £22. 7/6 @ £22. 10/ for ordinary Silesian.

HARDWARE.

Condition of Trade.

THE GRATIFYING increase in the volume of business to which we referred in our last issue still continues and manufacturers and jobbers report a good demand. Retailers are placing their orders with more freedom and the advance of the season, with the fine weather that has generally prevailed, is stimulating business. The most noticeable activity is in seasonable specialties, for which there is an especially good demand. Builders' and general Shelf Hardware is called for in only fair quantities. In Heavy Hardware and staple goods there is a steady demand, without, however, anything of a speculative tone in the market. Very little change is to be noted in prices, which continue on about the same level as for some time. The financial situation is reasonably satisfactory, with something of a sluggishness in collections. The detailed reports given below from our special correspondents reflect in a very satisfactory manner the condition of things in their respective markets.

St. Louis.

(By Telegraph.)

An entire week of rainy weather has caused a large falling-off in the demand, and jobbers report a very small week's trade. There are few changes to note. Wire Nails and Barb Wire are easier. The new list adopted by the manufacturers of Wire Nails, and referred to last week, is causing some trouble, but it is expected that this will be of short duration. Country trade is light and will remain so until the weather settles. The demand for summer goods is heavy, and indications point to a large spring and early summer trade. There is little or no complaint regarding collections.

Chicago.

(By Telegraph.)

The trade in heavy Hardware was never before so large as it has been thus far this year. The jobbing houses in this line have not only had a good demand from their regular trade among the smaller consumers, but they have enjoyed an unusual run of business from agricultural implement makers, wagon makers and other large manufacturing concerns who needed more material than they had contracted for with mills or desired it delivered more promptly. The large stocks carried here have proved a great convenience in this as in former emergencies. The wagon makers have latterly been large purchasers of wood stock, indicating the continued active condition of their business. Shelf Hardware cannot show such a record. Trade in this line from January to March was only about 75 per cent. of its volume in the corresponding period of last year, while the present month is about equal to last April. This is largely attributable to the lessened demand for staple goods. Even now the sale of Nails is not specially heavy, but straight Hardware is moving very satisfactorily and trade promises to continue so for some time to come. Reports from all sections as to the outlook for the future are encouraging. Collections are good.

Portland, Ore.

FOSTER & ROBERTSON.—There is little or no change to report in the business situation. Scarcity of money and bad roads still continue their depressing effect on trade. With good weather the roads will improve and also the trade, but the outlook for collections is not so favorable. Crop reports are still excellent, and should fair prices rule for produce this fall it should make a fine starting point for a good year to come. Prices show no marked change. Shot has declined 10 cents a bag.

Louisville.

W. B. BELKNAP & CO.—Business is running at a remarkably even gait, scarcely affected by the rainy weather and floods all over the South. This indicates a general consumption based upon a moderate widespread demand. There is absolutely nothing speculative to be seen in the whole horizon. Every now and then we get intimations more or less broad that there is to be a meeting with a view of advancing this or that product, and that "now is the time to subscribe." It has been our experience, however, so often of late that those who came at the eleventh hour received likewise every man his penny, that a certain amount of incredulity as to the advantages of being in early is excusable.

The New York *Evening Post*, by a recent correspondent, would have us believe that the depression in Iron and the heavier manufactures is being exaggerated with a view to securing a lower wage scale for the coming year; but the actual state of affairs could not well be counterfeited. It is too real and too firmly impressed upon those engaged in the business to admit of any successful simulation for effect. Meanwhile those factories which are well ordered and well situated seem to have their hands full of work, especially those which have a reputation on specialties or established brands. While, as we say above, there is no apparent ambition on the part of buyers to speculate, prices have reached such a point that we may feel reasonably safe from further shrinkage, and money spent for staple goods is not apt to be misplaced if coupled with a good policy of insurance. The accounts of floods in the country further south of us are most distressing, but those who see the silver lining to the cloud, dark and lowering as it is, declare that the best crops always immediately succeed floods. Certainly a very great economy has been practiced by cotton planters this year, and if the coming crop is anyway a bountiful one, it will be the cheapest ever raised. Locally, despite the heavy freezes, it is claimed that the fruit is not seriously damaged. This is an early cash crop and one by no means to be despised.

Collections are fair and if our Legislature could be persuaded to adjourn, the general aspect of affairs would be not altogether unsatisfactory.

Cleveland.

THE W. BINGHAM COMPANY.—Trade continues to show improvement, notwithstanding the winter-like weather that has prevailed. The orders cover a general line of Hardware, Builders' Hardware, mechanics' and agricultural tools being in the lead. The new card adopted by the Wire Nail manufacturers has been accepted by dealers here, with the exception of the miscellaneous list, which was evidently arranged without regard to the accommodation of the jobbing trade, as they would much prefer a high list with additions or deductions from the list for extras instead of net additions, as adopted by the manufacturers. We hope to see the list revised in this respect. The demand for Wire keeps up, despite the immense output, and prices continue very low, with no signs of improvement. The mills are shipping their product as fast as made, and are behind orders. Retailers report improvement in trade, and the outlook is good for future business.

Omaha.

LEE-CLARKE-ANDREESEN HARDWARE COMPANY.—Although this section of the country has been visited continuously, for the past 30 days at least, with stormy and ugly weather, making the roads almost impassible, still we have to report no falling off in general trade. The jobbing trade of this center still continues to excite comment by reason of its heavy increase as compared with a year ago. While this has been generally ascribed to improved conditions consequent upon large crops and good prices, there appears to be another factor which has had a large bearing on the situation. We allude to the decided change in sentiment among the retail merchants of Nebraska as to the placing of their business. Formerly Omaha jobbers were shown very little preference, the retail trade being indifferent whether they patronized jobbing houses located in the State or not. The fact is now being recognized that Omaha is buying all the live stock produced in the State, and a large proportion of other farm products, in addition to handling the output of most of the local manufactories, and,

therefore, should be entitled in return to the jobbing business of the State. Hence, it is that there has sprung up a strong sentiment among the retail dealers in the direction of giving Omaha jobbers the preference over outsiders. This sentiment in short may be expressed as "Nebraska for Nebraskans." This favorable action by the retail trade, together with the immense stocks of goods of all kinds carried by our wholesale merchants, and the persistent and aggressive efforts made to control and hold the business of the State and tributary territory, has had almost as much influence in producing the present satisfactory volume of business as abundant crops and fair prices.

St. Paul.

FARWELL, OZMUN, KIRK & CO.—Since our last report spring trade has advanced considerably, and it has been characterized by as few marked features as we have ever known. Orders have been satisfactory in numbers and size. No special activity, but a steady, even trade, in the aggregate amounting to a handsome increase over the trade in corresponding months in any former years. Prices in most lines, except Wire, Nails and Cordage have been fairly well maintained. Extraordinarily heavy rains have fallen over the Dakotas and most of Minnesota, which have delayed seeding, but the ground is thoroughly soaked throughout the dry belt in the Dakotas, and the prospects of a crop in that important territory are now unusually good. The Red River Valley, however, which is the banner wheat territory of the United States and the home of the "No. 1 Hard," will suffer some from the excessive rains, and the result will probably show to some extent at harvest, though favorable conditions hereafter may overcome the setback. Altogether the trade prospects are good, and indeed they have never been better in the Northwest.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—We are glad to report considerable activity in trade circles. The more seasonable weather which began two weeks ago made a satisfactory improvement in trade, which has continued, notwithstanding the cooler weather which has intervened, and the demand for some goods, notably Poultry Netting, has far exceeded the ability of various factories to supply, and consequently the interior merchants, not being familiar with the facts of the case, attribute the delay to the fault of the jobber, and hence many explanatory letters are necessary. Barb Wire is now in great demand, and manufacturers are far behind in making shipments. The demand for Wire Nails is far in excess of former years. The trade in General Hardware has improved with each successive week, and as a whole trade, so far as volume is concerned, may be considered good. We hear from some sections complaints of "bad roads," and complaints from the South that the floods throughout the greater portion have added to their former misfortunes, and retard both trade and collections. The increased tonnage of the railroads during the months of February and March is quite suggestive, and the gross earnings for these two months show an average increase of 11 per cent. over the same months in 1891, and when we take into consideration that for the same two months of 1891 there was an increase of 5 per cent. over 1889 we realize the fact, as expressed in our letter published in *The Iron Age* December 17, 1891, and to which attention was called editorially, wisely stating that it certainly deserved most careful attention of the trade. The letter referred to was the first bugle note we heard sounded upon the question of "freight rate reform." When we look at the low price now existing in Hardware, the valuation of the selling price not over one-half of the rates that existed when freight rates were established, we certainly realize the fact that it is most unnatural that the present rates of freight should exist. Not only should there be a reduction in the rate of freight, but we can see no reason why Hardware should not be reduced to a not higher rate than fourth class. During the last two months we have made frequent shipments from this port direct to London by steamer, 12/6 per ton measurement, being about 24½ cents per 100 pounds. One shipment was made at the above rate, and the same day we made shipment of the same class of goods to a point in Illinois at 49 cents per 100 pounds, being just double the freight rate to London, and the rate of freight on same goods between this city and New York is 15 cents per 100 pounds by rail and 12 cents per 100 pounds by water. Nor is this the greatest evil from which the entire Hardware trade of our country is suffering, as stated in our letter of December 17, 1891.

Freight classifications on Hardware read as follows: "Note.—All articles of Iron or Steel manufacture, when fitted, painted, japanned, bronzed, coppered, acid coppered, plated, tinned, galvanized, or when joined together, in the rough, will be considered Hardware and classified accordingly, unless otherwise specified in the classification."

Whereas Rule 15 in the classification reads as follows: "Any package containing articles of more than one class will be charged at the tariff rate for the highest classed article contained therein."

Thus one small article, weighing, perhaps, 1 pound, will not only increase the entire classification of a box weighing 400 pounds, but the entire shipment of 1000 pounds or over will be advanced. The necessity of a correction of this evil has recently become so great that the Hardware Merchants' and Manufacturers' Association of Philadelphia, in December last, made a strong appeal to the Official Classification Committee located in New York City, setting forth the injustice of their construction of their rule, showing them the impossibility of conducting the Hardware business in strict compliance with their construction. Illustrations were given this committee of where one shipment of goods had gone from this city to a customer, and because one of the boxes contained one-half dozen Tin Oilers, worth about 45 cents, the entire shipment was raised to first class. Another instance was given them where one shipment was made by another house as third class, which shipment consisted of the following: Second class, 10 pounds; third class, 105 pounds; Fourth class, 225 pounds, and shipped as Hardware, which comes under the rule of third class. One of these boxes was opened and 10 pounds of second-class goods was found and the entire shipment of 340 pounds was raised to second class, and yet we are met with the fact that unless each class is shipped separately under a different head all shippers are made liable to a fine of $1000, or liable to two years imprisonment. The answer to this appeal, with illustrations given, reads as follows:

GENTLEMEN: "Referring to your letter of January 25, in connection with the application of the Hardware Merchants' and Manufacturers' Association of Philadelphia, requesting certain modifications in the provisions of the Official Classification applying upon Hardware, so as to permit of various articles of Hardware, Cutlery, Mechanics' Tools, &c., as ordinarily shipped by hardware jobbers, in mixed packages, being rated at third class, and my letter of reply dated January 26, I have to advise that this subject was presented to the Official Classification Committee at a recent meeting, but after careful consideration of the question in its several phases and the reasons and facts presented in support of the application, the committee did not see their way clear to recommend to the various railroad companies in interest any change in the provisions of the classification obtaining upon Hardware, or Rule 15 (A), which applies upon articles shipped in mixed packages.

"Yours truly,

"C. E. GILL, Chairman."

The Hardware Merchants' and Manufacturers' Association of Philadelphia then issued a circular under date of March 25, which circular has been sent to various Hardware Associations of the different cities, as well as the jobbing houses and manufactories, asking for their co-operation in having this unreasonable construction corrected. This matter should receive the attention of all manufacturers and jobbers of Hardware throughout the country, as all are alike equally liable to fine and imprisonment for the violation of the construction of a law which cannot be complied with in conducting business. The matter is now before various manufacturers and jobbers throughout the country, and it is hoped that united action will be taken. In the meantime, would it not be advisable for every man in the Hardware trade, and all are alike suffering from this injustice, to assist so far as possible to have it corrected? If the interior merchants would write to the houses with whom they are doing business, either manufacturers or jobbers, urging them to do all in their power to correct this great evil, we claim that no such objectionable, unjust, arbitrary and defiant axe should be wielded over the

heads of those engaged in business. In connection with the above, would ask whether the deliberate opening of packages by the railroad officials is not evidence to the trade when goods are occasionally reported short, that the shortage may have occurred with these officials, and when there is no other evidence that these packages have been opened by other parties, whether the railroad officials should not be held responsible for these shortages. We contend while the officials are authorized and permitted to open boxes indiscriminately, they should be held responsible for the losses sustained. We will gladly mail circulars giving full particulars of grievances to those who will interest themselves sufficiently to write for the same.

San Francisco.

HUNTINGTON - HOPKINS COMPANY.—Since ours of the 30th ult. there has been a decided weakening in prices on heavy staples. Iron is still being sold very low, and on account of a lack of unity between the trade and the local mills the prices on Nails declined on the 5th to the following: Iron Cut, small lots, $2.30; carloads, $2.25; Steel Wire, any quantity, $2.55, less 5 cents per keg for prompt cash. Iron Pipe has also gone still lower. Trade in general has picked up, and while the quantity of goods sold is quite satisfactory, competition is so very keen that profits are materially affected. There is a slight improvement locally in Builders' Hardware; we do not, however, look for a very large business in this line for some time to come. Collections are still difficult to make, on account of the banks not loaning money on growing crops as early this season as usual, leaving the farmers without the necessary cash to pay their bills.

Baltimore.

CARLIN & FULTON.—In spite of inclement and unfavorable weather we can see an improvement in business and more frequent orders, especially for such goods as are strictly seasonable. Prices continue low and in many cases seem to invite speculation. Remittances are fair, probably up to the average, and as purchases have been made with great caution, every buyer seeming disposed to keep within the limits of his actual wants, we think the credits of the country are generally as safe as they ever have been.

New Orleans.

A. BALDWIN & CO.—The jobbing trade in this section is fairly active. The demand for Shelf Hardware shows a slight improvement. Our Mexican business has fallen off somewhat, owing to the high price of xchange. Staples are moving freely, and, on the whole, business is on a par with last season. It lacks life and snap, but the volume is about as great.

Notes on Prices.

Cut Nails.—Manufacturers and their representatives report a somewhat quickened demand for Cut Nails, but refer to the market as being without any particular life or snap. Prices in the East are well maintained and are on the whole in a more satisfactory condition than in the West. They are on a basis of $1.55 for round lots of Steel Nails at mill, with 25 or 30 cent average, this price being as heretofore subject to the understanding between the mills by which they equalize freight with competing points. The difference of 3 cents a keg in Iron Nails is quite well maintained. On orders of 1000 kegs or more a concession of 5 cents is made on above prices. The quotation on small lots from store in New York is $1.75, carloads on dock being held at $1.65.

Chicago, by Telegraph.—Cut Steel Nails are selling in moderate quantities at $1.60 to $1.65 from factory on 30 cent. average. The Lakeside Nail Company are taking the bulk of the business here, but latterly a few of the Wheeling makers have been regaining some of their old trade. Under the circumstances quotations can hardly be considered firm. Jobbers continue to sell at $1.70 from stock.

Wire Nails.—The trade are quite generally adopting the new Wire Nail card, and regard with general approval the change made in it. The regular quotation is $1.70 at mill. The volume of business is referred to as fair, but not especially heavy, as many of the large purchasers have covered their requirements for some time to come.

The new list for Miscellaneous Nails does not meet with entire approval from the trade, objection being made to the adding of extras for packages after deducting the discount. The manufacturers are, we believe, considering the advisability of revising the list by raising the list price and making that the price for from 1 to 10 pound papers, adding to the list for smaller packages and deducting from the list for kegs. Such an arrangement would probably meet with the hearty approval of the trade.

Chicago, by Telegraph.—Wire Nails are reasonably firm at the new rate named by manufacturers—namely, $1.75 Chicago, but the large trade seems to be well supplied for the present and new business is light. Jobbers continue to quote $1.85 for small lots and $1.80 for mixed carloads.

Barb Wire.—There is no important change in the general aspect of the market. The aggregate of business is large, and many of the mills are filled up with orders sufficient to occupy them for several weeks. The tone of the market is not, however, any stronger than at our last review, and the quotation of $2.65 for carloads of Four-Point Galvanized, at mill, fairly represents the current prices, this figure being sometimes shaded slightly, while on the other hand some of the mills refuse to make it. New York prices for local trade are $3.10 for small lots, with 10 cents off for carloads.

Chicago by Telegraph.—Barb Wire manufacturers are still behind on deliveries, doing a very heavy business. Carload lots are quoted at $2.30 for Painted and $2.75 to $2.80 for Galvanized. Small lots are $2 40 and $2.90 respectively. Jobbers are having a very active trade.

Rope.—There has been no change in the regular prices of Cordage as announced by the National Cordage Company or their competitors outside the combination. The market has, however, been developing a slight irregularity, and the general prices of Rope are in many cases slightly cut. This is understood to be owing to different causes, the concessions made by outside manufacturers, the fact that there are some large stocks purchased at lower prices than are now ruling, and also a disposition on the part of some of the representatives of the National Cordage Company to shade regular quotations. While the combination includes most of the large manufacturers, and thus represents something like three-fourths of the production, it is the impression of the trade that outside makers of Cordage occupy a somewhat more important position in the market than a few months ago.

Copper Goods.—As a result of the advances which have recently taken place in Copper the manufacturers of some lines of goods are endeavoring to advance their quotations, and the market in these branches is accordingly firm.

Wringers.—We give below the prices on the Clothes Wringers put on the market by Lovell Mfg. Company, Erie, Pa., for whom W. H. Quinn is agent, 103 Chambers street, New York, as published in their price-list dated April 4, 1892. It will be seen that prices are given on the Improved Continental and L. M. Co. Wringers, which have recently been added to the company's line. The former is described as similar to the Universal of the American Wringer Company, and the latter similar to the Eureka manufactured by that company. The list is as follows, subject to the usual 2 per cent. for cash:

Happy Thought.

Wood Frame with Patent Roller Bearings.

Size number....	110	112	118	122
" of rolls...	10 x 1¾	11 x 1¾	12 x 1⅞	12 x 1⅞
Price per dozen	$28	$33	$47	$62

New Princess.

Wood Frame.

Size numbers ..	10	12	18	20
" of rolls...	10 x 1¾	11 x 1¾	12 x 1⅞	12 x 2
Price per dozen	$24	$29	$43	$52

Improved Continental.

Wood Frame.

Size numbers.....	XX 2⅛	XX 1¼
" of rolls.....	10 x 1¾	11 x 1¾
Price per dozen.....	$24	$29

Princess.

Wood Frame.

Size numbers.....	2⅛	3⅛
" of rolls.....	10 x 1¾	11 x 1¾
Price per dozen.....	$24	$29

The Hartford.

Wood Frame.

Size numbers.....	7	9
" of rolls.....	10 x 1⅝	10 x 1¾
Price per dozen.....	$20.50	$21

Invincible.

Wood Frame with Steel Springs.

Size numbers.....	40	42
" of rolls.....	10 x 1¾	11 x 1¾
Price per dozen.....	$30	$34

The L. M. Co. Wringer.

Eureka Style.

Size numbers.....	2	3	4
" of rolls.....	10 x 1¾	11 x 1¾	12 x 1¾
Price per dozen...	$21	$25	$30
Size numbers.....	....	5	6
" of rolls.....	.14 x 1¾		16 x 2
Price per dozen.....		$39	$48

Old Reliable.

Eureka Style.

Size numbers.....	2	3
" of rolls.....	10 x 1¾	11 x 1¾
Price per dozen.....	$20	$24

Cottage.

Eureka Style.

Size numbers.....	2	3
" of rolls.....	10 x 1¾	11 x 1¾
Price per dozen.....	$19	$23

Globe.

Eureka Style.

Size numbers.....	2	3
" of rolls.....	10 x 1¾	11 x 1¾
Price per dozen.....	$18	$22

Princess.

No. 11, Bench Wringer with Folding Bench.

Size number.....	11
" of rolls.....	10 x 1¾
Price per dozen.....	$33

New Princess.

For Stationary Tubs.

Size number.....	22
" of rolls.....	12 x 2
Price per dozen.....	$62

Glass.—The decision of the Glass manufacturers to close early has not appeared to stimulate the demand, although prices are reported somewhat firmer at the factories. This stiffening of values does not extend to the jobbing trade, as 80 and 10 per cent. discount is not an unusual price, even in comparatively small lots. French Glass also continues low in price, quotations ranging from 80 and 10 and 2 to 80 and 10 and 5 per cent. discount, according to the size and desirability of the order, the responsibility and sharpness of the buyer. There is considerable diversity of opinion among the Glass trade regarding the stocks on hand at the American factories. The claim is made by the manufacturers that stocks on hand are small, while on the other hand the determination to close May 31 would lead to the supposition that stocks were larger. It is supposed that jobbers and large dealers have placed their contracts at a figure approximating 85 per cent. discount. At a meeting of the Plate Glass manufacturers, held in Pittsburgh on the 15th inst., the fact was brought out that trade had been very dull during the past three months, and that most of the plants have been storing their product. Nominal prices remain unchanged as follows: American Window Glass, 1000-box lots or more, 80, 10 and 5 per cent. discount; carloads, 80 and 10 per cent. discount; less than carloads, 80 and 5 per cent. discount; French Window Glass, 75 and 10 per cent. discount; American Plate is held at a discount of 50, 10 and 5 per cent., and imported Plate at a discount of 60 per cent.

IT IS ANNOUNCED that W. W. Squire has been admitted a partner in the business of Arthur Painchaud & Co., Montreal, Canada, the style of the firm becoming Painchaud, Squire & Co. It is also stated that the business will be conducted with increased capital and facilities.

Hardware Club of New York.

A MEETING of the Club was held in the dining room of the Cosmopolitan Hotel, corner of Chambers street and West Broadway, last Saturday, April 16, at 1 p. m., for the purpose of electing a board of governors. An invitation to lunch at that time was extended to the members of the Club, and a large representation was thus secured. The gathering was a very enjoyable one, and was characterized by a cordial and sociable spirit. After lunch, the following Board of Governors, who had been previously nominated by a committee appointed for that purpose, was elected:

BRACE HAYDEN,
M. C. OGDEN,
CHARLES DALY,
THOMAS F. KEATING,
R. R. WILLIAMS,
J. H. KENNEDY,
R. H. SWAYZE,
E. C. VAN GLAHN,
A. G. SHERMAN,
W. R. WALKLEY,
W. H. WILLIAMS,
J. L. VARICK,
PETER MCCARTEE,
EUGENE BISSELL,
A. D. CLINCH.

A meeting of the Board of Governors was held on Tuesday, April 19, at 11 o'clock, in the office of *The Iron Age*. All the members of the board were present. On motion R. R. Williams was elected temporary chairman and E. C. Van Glahn, clerk. The board then proceeded to the election of officers, when the following gentlemen were chosen:

WILLIAM H. WILLIAMS, president.
R. H. SWAYZE, vice-president.
THOMAS F. KEATING, treasurer.
J. L. VARICK, secretary.

In accordance with the provision of the constitution, the Board of Governors were divided by lot into three classes of five each, the first class to hold office until the first annual meeting of the club; the second class to hold office until the second annual meeting of the club, and the third class to hold office until the third annual meeting of the club. This was done with the following results:

First Class.—Brace Hayden, Thomas F. Keating, J. H. Kennedy, William H. Williams, J. L. Varick.

Second Class.—M. C. Ogden, R. R. Williams, R. H. Swayze, A. G. Sherman, W. R. Walkley.

Third Class.—Charles Daly, Peter McCartee, Eugene Bissell, A. D. Clinch, E. C. Van Glahn.

The following Committee on Club Rooms was appointed by the president: Messrs, McCartee, Clinch, Walkley, Varick, Bissell and W. H. Williams.

In accordance with a resolution adopted by the club at their Saturday meeting, to the effect that until regular club rooms are established the Board of Governors be authorized and directed to designate a place which shall be recognized as the headquarters of the club for the purpose of notices, &c., as required by the constitution, it was determined that the office of the secretary, J. L. Varick, 91 Reade street, New York, be such headquarters until further notice.

A committee, consisting of Messrs. Varick, Clinch and Van Glahn, was appointed to obtain signatures of persons identified with the movement who have not as yet formally become members of the club.

Grant Monument.

AT A MEETING of the Grant Monument Association, held at the Chamber of Commerce, April 13, the following trade committees were appointed to cooperate with the Grant Monument Association to raise funds to complete General Grant's tomb:

Hardware and Cutlery—Charles Morrill, chairman; William H. Williams, secretary; Abraham Quackenbush, Robert Sickles, Joseph F. McCoy, J. Curley, W. T. Norton, Charles Parker, W. R. Walkley, A. D. Clinch, M. C. Ogden, Charles Landers, Peter McCartee, A. Alford, J. C. McCarty, Thomas F. Keating, R. K. Carter, William G. Smythe, Thomas J. Atkins, William Fuller, J. L Varick.

Manufacturers of Brass and Copper Goods—T. L. Scoville, chairman; U. T. Hungerford, W. A. Hungerford, John Sherman, Walter Hubbard, Edward Miller, Jr., H. L. Judd, James H. White, A. A. Cowles.

Wire Cloth and Wire Workers.—George E. Howard, chairman; James Hopkins, secretary; George H. Brown, treasurer; Howard & More, Wooley & Co., William Cabble, J. G. Miller, Robert T. McMurray, F. G. Richardson, E. Rattey, W. S. Estey.

Plumbers' Materials.—Jordan L. Mott, chairman; Franklin Miller, secretary; Frederick Adee, Henry Meyer, Mr. Peck, John Harlin.

Metals and Iron.—Frank Dickerson, chairman; Edmund Hendricks, treasurer; George A. Crocker, Nicholas L. Cort, Leonard Lewisohn, R. W. McKee.

Agricultural Implements.—H. N. Hubbard.

Trade Items.

D T. MALLETT, New Haven, Conn., is distributing a pamphlet, the cover of which is a *fac-simile* of the cover of "Ideas for Hardware Merchants," a book which he is about publishing. The book—a 150-page volume—will be printed on the highest and most expensive grade of super-calendered white paper, and will contain 24 articles by the publisher upon live topics which are of interest to every Hardwareman, such as Starting a Hardware Store, Hints about Inventory, Ratio of Expenses to Sales, The Use of a Store Window, &c. The interesting manner in which Mr. Mallett has treated like subjects in the past is a sufficient guarantee that the coming book will be extensively read. The first edition will be 5000 copies, and a number of pages at the end of the book are afforded for advertising purposes.

THE ELECTRIC CUTLERY COMPANY have moved their New York office to 113 Chambers street, where they will carry a full line of samples of their Razors, Strops, Pocket Cutlery, Scissors and Shears. Their new factory at Newark, N. J., is fully equipped for the manufacture of these goods, and we are advised that every article bearing their brand "Electric" is

personally watched by one of the members of the company from the forge house to completion, and is under no circumstances allowed to go to the trade unless absolutely perfect.

OUR READERS WILL observe the page advertisement of Gilbert & Bennett Mfg. Company, New York, Chicago and Georgetown, Conn., in which they mention that they are manufacturing Wire Cloth, Netting, Fencing, Gates, Fencing Tools, Wire Goods, Wire Work, Railings, Window Guards and Wire Lathing with Hammond's Metal Furring. They state that in former years they have been unable to supply the demand for Poultry Netting, but having increased their facilities and accummulated a large stock they are now prepared to make prompt shipments. An illustration of their new factory in Chicago is also presented. This factory was occupied by the company in February last and is 41 x 168 feet, four stories high, with a floor space of 30,000 square feet.

THE NORTH BROTHERS MFG. COMPANY of Philadelphia, manufacturers of Hardware specialties, in a circular to the trade, under date of April 13, 1892, announce the purchase by them from the Syndicate of Judgment Creditors of the American Machine Company of that city of the entire business of that company, including stock, tools, fixtures, patents, &c., formerly owned by them. They state that all orders to the former company not yet filled will have their prompt attention; also that all accounts due to the Syndicate of Judgment Creditors are to be paid when due to them as their successors. The North Brothers Mfg. Company will make up and carry in stock a full line of goods and be able to ship promptly all orders received by them.

THE LUDLOW-SAYLOR WIRE COMPANY, St. Louis, Mo., have recently secured the contract for the elevator inclosures, iron grilles, and brass balcony rails for the new Ridge Building, Kansas City, Mo., which is to be occupied by the Masonic fraternity when completed. They have also made a number of wrought-iron easels for use in the Missouri Pacific office in St. Louis, for displaying prints of their lines, stations, &c. These easels are finished in Bauer-Barff process, and are well made and very prettily designed.

STUART & PETERSON COMPANY, Philadelphia, advise us that a large shipment of their hollow ware is lying in New York waiting to be forwarded to Sao Paulo, Brazil. The delay in dispatching it is due to the prevalence of yellow fever in that section of the country, freight for which is refused.

THE MONARCH CYCLE COMPANY, Chicago, Ill., have appointed the following agents who will handle their Monarch Wheels in the territory designated: Butler Hardware Company, 18 Warren street, New York, Eastern New York and the State of New Jersey; C. W. Dalsen Cycle Company, Philadelphia, Eastern Pennsylvania; H. G. Huston & Co., Boston, Eastern New England, and George Hilsendegen, Detroit, Mich., part of that State. The company advise us that they are very busy, and have received large orders from the above concerns.

THE NEW YORK STATE HARDWARE JOBBERS' ASSOCIATION met at the Fort Schuyler Club, Utica, April 7. There were about 20 gentlemen present, representing firms in Albany, Troy, Syracuse, Rochester, Binghamton and other cities of the State. Their session was occupied in the discussion of various trade matters.

IT IS ANNOUNCED that the partnership heretofore existing between Herman Bantly and E. H. Fronheiser, under the firm name of Bantly & Fronheiser, Johnstown, Pa., has been dissolved by mutual consent. All debts due to the partnership are to be received by W. Horace Rose of Johnstown, to whom also all demands are to be presented for payment. The Hardware business will be continued by Herman Bantly at the old stand.

THE CHELSEA FILE WORKS, Norwich, Conn., are sending out printed matter calling attention to their Chelsea Handcut Rasps, to the quality of which they refer, stating that by using a special quality of steel, and by cutting and punching exclusively by hand they are enabled to produce a sharp, keen cutting tooth, which they claim will do the work more rapidly and with less labor than machine-cut Rasps.

G F. HUNTER, who is referred to as a successful Hardware dealer and banker of Hawarden, Iowa, and A. G. Cripps, a well-known furnaceman of Marshalltown, Iowa, have formed the Hunter Hardware Company of Rockford, Ill., and will put in a new and complete stock of Hardware and Furnaces at No. 421 East State street, in that city,

THE STORE OF George A. Weaver, dealer in Hardware and Agricultural Implements, Newport, R. I., was destroyed by fire on the 11th inst. Mr. Weaver, with characteristic energy, made arrangements for rebuilding at once, and invites suggestions from experienced Hardwaremen in regard to the arrangement of his store. The front is about 80 feet; depth, 85 feet, and rear, 68 feet. He will value, among other points, suggestions as to a desirable hight for the ceiling of the first floor. Perhaps some of our readers can serve him by furnishing information on this and other matters connected with the arrangement of such a store.

Wire Nails.

RECTOR & WILHELMY COMPANY, Omaha, Neb., issue the new Wire Nail card, April 11, 1892, in convenient form in a table giving the length, number to pound, &c. As it will be of interest to many of our readers, we reproduce it below:

WIRE NAILS.

Schedule of extras in effect April 11, 1892.

RECTOR & WILHELMY COMPANY.

WHOLESALE HARDWARE,

OMAHA, NEB.

SIZE, LENGTH, NUMBER TO THE POUND, AND RATE.

BASE $ PER KEG.

ADVANCE ABOVE 60 NAILS.

Size.	Kind.	Length, inches.	Number to pound	Advance on rate.
60	Common	6	12	base
50	"	5½	15	.10
40	"	5	21	.25
30	"	4½	27	.25
20	"	4	35	.35
16	"	3½	51	.45
12	"	3¼	66	.45
10	"	3	87	.50
8	"	2½	132	.60
6	"	2	252	.75
4	"	1½	432	.90
3	"	1¼	720	1.20
3	Fine	1⅛	1140	1.60
10	Casing	3	121	.65
8	"	2½	170	.75
6	"	2	310	.90
4	"	1½	584	1.25
10	Finish	3	137	.75
8	"	2½	190	.90
6	"	2	350	1.10
4	"	1½	760	1.45

3⅝ lbs. 4d. Common, or 2⅝ lbs. of 3d. Common, will lay 1000 shingles. 3¾ lbs. of 3d. Fine will put on 1000 laths, 4 Nails to lath.

It is Reported—

That the new firm of Coats & Butler have just opened up a fine line of Hardware, Implements and Harness in the McCuen Building, Choctaw City, Ok.

That the Forbes Hardware Company of Ottawa, Kan., have been incorporated.

That Cockrane & Chapman are moving their stock of Hardware and Farming Implements to their new brick store on North Main street, Mountain Grove, Mo.

That the Hardware firm of Lawrence & Rowlson, Hillsdale, Mich., has been dissolved. M. Rowlson has retired and the business will be continued by C. E. Lawrence.

That Palmer & McBride of Cuba City, Wis., have leased a four-story building at Freeport, Ill., which they will occupy with an entirely new stock of Hardware and Cutlery.

That Peter Scholl has disposed of his Hardware store at Mansfield, Ohio, to Andrew Shick of North Baltimore. Mr. Scholl will hereafter devote his entire time to the oil trade.

That S. B. Martin has engaged in the Hardware business at Dalton, Ohio.

That the store of the Southern Hardware Company, as Shreveport, La., was burned out on February 29.

That in a fire at Sault Ste. Marie, Mich., on February 28, the Hardware stock of Higgins & Greene sustained a loss of $2000, fully covered by insurance.

That the Hardware firm of J. Pinten & Bro., Hancock, Mich., have dissolved partnership. Joseph Pinten continues the business at the old stand.

That D. D Snyder and G. R. Warne have sold their Hardware store in Chrisman, Ill., and purchased the Hardware business of Matticks & Perry, Danville, Ill.

That John W. Bearce has commenced the Agricultural Implement business at Bowling Green, Ky. He was with J. T. West & Co. for a number of years.

That W. A. Knowlton, Findlay's Lake, N. Y., has sold his stock of Hardware to Beebe Bros. of French Creek, N. Y.

That in a fire on the 3d ult. the Hardware store of J. H. Curtis & Son, Camden, Me., was considerably damaged.

That Dunham & Price have opened an Implement store at North Lansing, Mich.

That A. J Bickford has removed his Hardware stock to the Webster Building, Leonard, Mich.

That David H. Lamont of Valley, Ill., has sold his stock of Hardware, and is looking for a location at Apple River, Ill.

That Charles J. Fisher has sold his interest in the Hardware firm of Fisher Bros., Bucyrus, Ohio, to G. P. Fisher.

That the store of Vaden & Co., Hardware merchants, Manchester, Va., was burglarized on the 1st ult.

That D. C. Dodge, Pulaski, N. Y., is making arrangements by which his Hardware store will be enlarged.

That Mr. Taylor has taken possession of his new Hardware store at Constableville, N. Y.

That Hole & Wiese are a new Hardware firm at Harbine, Neb.

That F. E. Cruse has purchased a half interest in the Hardware store of W. Swarts at Douglas, Neb.

That Miller & Duff, Hardware dealers, Huron, Kan., are now located in their new building on South Main street.

That M. O. Crowell, Halifax, N. S., son of Captain Crowell, who has been 11 years with William Robertson, has opened a Hardware and Ship Chandlery establish-

ment. Mr. Crowell has leased the premises formerly occupied by D. F. Power.

That burglars entered the Hardware store of Hoernell & Son, Racine, Wis , on the 3d ult., and carried off $200 worth of Revolvers and Pocket Cutlery.

That O. P. Scriver's Hardware store at Greensburg, Ind., was robbed on the 4th ult. Fifty dollars' worth of goods was stolen.

That Toledo, Ohio, has a new Hardware firm, the style of which is Ketel, Katschke & Co. They are doing business at 621 Monroe street.

That Tinker & Duncklee have opened a Hardware store at Milford, N. H.

That Battin & Hockaday, Kingfisher, Ok., have commenced the erection of their brick block. When finished it will be occupied by their Hardware stock.

That C. C. Huddleston of Lamar, Col., is going to open a Hardware store at Joplin, Mo

That L. W. Frederick, Fort Madison, Iowa, will build a new Hardware store.

That Stahl & Hensel, Lansing, Mich., have opened their new Hardware store.

That Robbins & Edwards' Hardware store at Ypsilanti, Mich., was robbed on the 1st ult. of $300 worth of Revolvers, Cutlery, &c.

That Cash & Bradford, dealers in Hardware, Stoves, &c., Hyannis, Mass., were burned out on the 4th ult. Loss, $12,000; insured.

That a small fire in the Bush Hardware Company's store, 126 Clay street, San Francisco, on the 2d ult., did about $200 damage to the contents.

That the Nolton & Adams Hardware Company of Port Townsend, Wash., have been incorporated, with a capital of $20,000.

That the Hardware business of M. H. Rowley, Mitchell, S. D., will hereafter be carried on under the title of the Mitchell Hardware Company, a stock company having been formed.

That A. A. Allen and W. H. Broas have formed a copartnership at Springfield, Mich., and will handle a full line of Agricultural Implements, Buggies, &c.

That in a large fire at East Liverpool, Ohio, on the 3d ult., the Eagle Hardware Company were burned out. Loss, $500.

That Mr. Statley of Cleburne, Texas, will open up a stock of Hardware at Velasco.

That the old-established Hardware store of W. C. Hawkins, Franklin, Pa., has been purchased by M. J. Campbell, who took possession on April 1.

That the Hardware establishment of Blaisdell & Co., Lowell, Mich., was robbed several weeks ago.

That Robert T. Serapp has purchased the Hardware stock of Snyder & Warne, Chrisman, Ill.

That A. C. Risley has opened a new Hardware store at New Milford, Pa.

That Cromwell & Slade have commenced the Hardware business at Gloversville, N. Y.

That the Hardware firm of Green & Albro, Gowanda, N. Y., has been dissolved, Frank Green retiring.

That George B. Haines has purchased a half interest in the Hardware business of F. A. Sullivan, Middleburg, N. Y.

That F. W. Holmes of East Otto, N. Y., has disposed of a half interest in his business to C. H. Mason.

That Baker & Gay, dealers in Hardware, &c., Beverly, Mass., are making extensive alterations in their store by which better facilities for handling their increasing business will be secured.

That A. Patterson & Co., Martin, Mich., have sold their stock of Hardware, Agricultural Tools, &c., to Campbell & Murray, who have taken possession.

That the Hardware firm of Butt, Graves & Friend, Norwalk, Ohio, has been dissolved, G. W. Graves retiring. The business is now being carried on by George E. Butt and Emil O. Friend, under the firm name of Butt & Friend.

That S. Hanna & Son, Denison, Texas, have opened a new Hardware store at that place.

That McKee Bros., Hardwaremen, Hagerstown, Md., will shortly add another story to their building.

That the Wolf Hardware Company, Altoona, Pa., have taken possession of their new quarters, which greatly increase their facilities.

That M. L. Tunney has purchased the Hardware store of G. L. Dodd, Morris, Pa.

That E. Sperry has sold his interest in the Hardware and Stove business to his partner, Wm. H. Sperry. A. H. Fraser will probably take the former's place in the firm.

That Evans Bros., Westboro, Pa., are negotiating with Geo. F. King, Belmont, N. Y., for the purchase of his Hardware business.

That W. H. L. Donaldson has removed from Rochester, Minn., to Preston, where he has opened a Hardware store.

That John Ericson has sold his interest in the Hardware store at Busti, N. Y., to Charles Mattison.

That Edward Tilton contemplates opening a new Hardware store at Waverly, N. Y.

That F. H. Hussey & Co., Revere, Mass., have taken possession of their new store and are putting in an entirely new stock.

That the Hardware store of George E. Sleeper, Lynn, Mass., was damaged by fire on the 20th ult. The loss was $1500.

That Joseph Ash, Alpena, Mich., will remove his Hardware stock to new quarters.

That Peter Hamer, Hartsburg, Ill., has decided to build an addition to his Hardware store.

That Wilson, Cruse & Co., Hardware merchats, Beaumont, Texas, were damaged by fire on the 17th ult.

That Thomas H. Doan of Berwick, Pa., has purchased the Hardware store of Charles Brubaker.

That R. M. Bogg's Hardware store at Boise, Idaho, was burglarized on the 16th ult. About $100 worth of goods were stolen.

That Worsley Bros. & Co., South Bethlehem, Pa., dealers in Hardware, have dissolved partnership and sold out to Mr. McKee, who will continue the business at the old stand.

That the Trenton Hardware Company, Trenton, N. J., successors to the Dunn Hardware and Paint Company, have greatly improved the appearance of their store by the introduction of new counters, shelves and movable ladders.

That Theodore Townley has purchased the Hardware store of the late Wells A. Laflin, Ballston Spa, N. Y.

That Hubbard F. Roberts, Jr., of Poughkeepsie, N. Y., has gone to Akron, Ohio, to engage in the Hardware business with his cousin.

That the Hardware firm of Ogden & Sharpe, Ord, Neb., has been dissolved. The business will hereafter be conducted by Mr. Ogden.

That Strain & Smedley, Agra, Kan., are building an addition to their Hardware store.

That Valkenbery & McEvoy have started a general Hardware store on the corner of First and Locust streets, Dubuque, Iowa.

That Postmaster F. W. Stees of Bloomer, Wis., has purchased the Hardware store of Dleks & Otto.

That the Hardware store of W. Mudge, Champagne, Ill., was damaged by fire on the 19th ult. Loss, $10,000

That in a fire at Kinzua, Pa., Turney's Hardware store was destroyed. Loss, $5000; insurance, $4000

That Mr. Norman of Port Jervis, N. Y., will remove to Newburg, where he expects to enter the Hardware business.

That a new Hardware firm, under the style of Crist & Harris, has commenced business at Montgomery, N. Y.

That the Implement firm of Fernsner & Phelps, Beatrice, Neb. have dissolved. Mr. Fernsner retires and Mr. Phelps will continue the business.

That Koulsky Bros. have opened a new Hardware store in South Omaha, Neb.

That Walter D. Hunt and Thomas Burns have purchased the Hardware stock of the Miller Company, Sioux City, Iowa.

That Hanson & Oias have bought out the Carlson Hardware Company, Eau Claire, Wis., and will temporarily carry on the business at the old stand.

That Stevens & Hills' new Hardware store at Oneonta, N. Y., is one of the best appointed stores in that section. There are three floors in the building, the main floor being 25½ x 100 feet.

That Frank Edwards has opened a Hardware store at Hulberton, N. Y.

That the Hardware store of R. H. J. Neilly, Bradford Ont., was damaged by fire on the 22d ult. Loss about $4500.

That the Colfax Hardware Company, Whitman County, Wash., has commenced work on its new store, which will have a frontage of 80 feet.

That H. C. Langdon of North Adams, Mich., will form a coparnership with C. E Lawrence at Hillsdale in the Hardware business

That an unsuccessful attempt was recently made to burglarize the Hardware store of Brown, Weddington & Co, Charlotte, N. C. The miscreant, a negro, was arrested and in now in jail awaiting trial.

Price-Lists, Circulars, &c.

STANLEY WORKS, New Britain, Conn., and 79 Chambers street, New York: Discount sheet dated April 4, 1892. This list gives the discounts on their extensive line of goods revised to date. Comparatively few changes are made except in quotations of Tacks, on which the new discounts of the Atlas Tack Corporation are adopted The trade will appreciate the convenience of having the changes marked by an asterisk, obviating the necessity for a comparison with the former discount sheet.

PORTER BLANCHARD'S SONS COMPANY, Nashua, N. H.: Churns, Roller Butter Worker, Butter Mold, Print Butter Carriers, Butter Package, Milk Tester, Parchment Paper, &c. These goods are referred to as possessing peculiar advantages and as having met with large sales.

STARKS, EDSON & CO., Saxton's River, Vt.: Albamural. It is explained that Albamural is a wall coating or water paint especially designed for use upon wood, rough or smooth, brick and stone, and is peculiarly adapted to use in manufactories, storehouses, freight depots, dock sheds and all other places where an economical wall coating is desired, and where the greatest available amount of light is required. It is claimed that Albamural will cover 40 to 80 square feet per pound, according to the nature of the surface. It is put up in boxes of 25, 50 and

100 pounds, and in barrels of from 300 to 325 and from 400 to 475 pounds. It is produced only in white, but it is stated that consumers can tint it to suit taste and requirements by adding any dry color.

CHICAGO AXE AND TOOL COMPANY, Hammond, Ind., are offering for the season of 1892 Perfection and Calumet Axes, the latter being solid but the former welded The Perfection Axes are a recent addition to their line, for the manufacture of which they have completed preparations. These Axes are made in the usual manner, the company having found it desirable to make a welded Axe to meet the requirements of their trade. The company also manufacture a line of Hatchets of the following brands: Perfection, which are welded, and Calumet and Dearborn, which are solid.

THE GOULDS MFG. COMPANY, Seneca Falls, N. Y., and 16 Murray street, New York: How to spray, when to spray, and what Pumps to use. The catalogue is devoted to Pumps for applying Fungicides and Insecticides. Illustrations and descriptions with list prices are given of Spray Pumps of various styles, together with nozzles and other attachments used in connection with the Pumps

WALBRIDGE & Co., Buffalo, N. Y.: Bicycles and Sundries. Illustrations are given of the goods in this line handled by them, including the Overstone in four styles, and four styles of the new Queen City Safety, together with a large variety of Bicycle Accessories. They call attention to the fact that they have secured the agency of the Overstone Cycles, manufactured by Lloyd, Read & Co., Coventry, England. These wheels are referred to as being first class, being built upon the most approved models, the material, finish and workmanship being of the highest possible order.

PECK, STOW & WILCOX COMPANY, Southington, Conn.; Cleveland, Ohio, and New York: Squaring Shears, Bench, Hand and Circular Shears, and Machines for cutting and shaping Sheet Metal. Illustrations and prices are given in a pamphlet devoted to this line of goods. Some of the later patterns of Power Squaring Shears show a light construction, designed for cutting light metal.

THE NEW PROCESS RAW HIDE COMPANY, Syracuse, N. Y.: New Process Raw Hide, Noiseless Solid Raw-Hide Spur, Bevel and Friction Gears, Washers, &c.; also Raw-Hide Bound Mallets and Chisel Handles. The manufacturers claim that their Raw-Hide Bound Chisels and Mallets are durable, finely finished and handsomely made, and that they will not split. The raw-hide binding is referred to as having all of the desirable qualities, and none of the objectionable features of iron ferrules, while the spring of the hide facing, cushions the blow and prevents jarring, greatly relieving the arm of the user.

RIEHLE BROS., Philadelphia, Pa.: Pamphlet showing what they manufacture and deal in. Illustrations are presented of their Standard Railroad Track Scale, Compound Parallel Crane Beam, Patent Furnace Charging Scale, Improved Pig-Metal Scale, Patented Wagon Scales, Cattle and Drove Yard Scales, Warehouse and Railroad Depot Scales, Hopper Scales for grain, Rolling Mill Scales, Portable Platform Scales, Wheelbarrow Scales, Counter Scales, Railroad and Warehouse Trucks, Baggage and Express Barrows, Charging Barrows, &c.

F. E. MYERS & BRO., Ashland, Ohio: Catalogue and price-list of Pumps, Pipe, Hose, Cylinders and Fixtures, Haying Tools, Hay Carriers, Hay Forks, Pulleys, Grapples, &c. The catalogue is a handsome volume of 128 pages and represents satisfactorily the extensive line of goods manufactured. A view of the works is given, together with the names of branch distributing houses and general agencies for the goods. In the introductory remarks the manufacturers state that the volume of business done by them in 1891 was the largest in their history, an increased demand being noted on their entire line. They also state that the manufacturing department has been greatly enlarged and improved by the addition of new and special machinery and tools.

MARLIN FIRE ARMS COMPANY, New Haven, Conn.: Catalogue for 1892. It relates to Ammunition for Rifles and Revolvers, Bullets, Cleaning Rods, Everlasting Shells, Extras on Rifles and Revolvers, Reloading Implements, Revolvers, Rifles, &c., of which illustrations are given. A telegraphic code is also supplied.

ÆTNA POWDER COMPANY, 95–101 Randolph street, Chicago: Catalogue of Electric Blasting Apparatus. Illustrations and descriptions are given of their Victor Magneto Blasting Machine, Smith's Magneto Blasting Machine, Improved Electrical Exploders and Improved Reel Box and Cable. Directions are also furnished for blasting by electricity, together with an enumeration of a few specimen Electric Blasting Outfits.

AJAX TORPEDO AND DYNAMITE WORKS, Bay City, Mich.: Nitro-Glycerine Torpedoes, Blasting Supplies and Dynamite Cartridges. The manufacturers call special attention to their Dynamite and Dynamite Cartridges, which they manufacture in all grades.

WRIGHT & COLTON WIRE CLOTH COMPANY, Worcester, Mass.: Price-list No. 15 of Galvanized Wire Cloths and Galvanized Poultry Netting. The company's patent New Process Hard Steel Wire Netting is especially referred to. This Netting is made only in Nos 18 and 19 wire and in 1¼, 1½ and 2 inch mesh. It is described as woven from hard steel wire and galvanized after it is woven with pure zinc spelter, the luster secured by which is mentioned. It is woven with half right and half left hand twist, leaving a small eye in the center of each, through which an 8 ounce tack or shingle nail may be driven for fastening to posts or rails. The stiffness and rigidity of this Netting is pointed out. It is also stated that it will roll out and lay perfectly flat and smooth on the floor without being crooked or baggy.

THORN SHINGLE AND ORNAMENT COMPANY, Philadelphia, Pa.: Thorn's Metallic Roofing Tiles or Plates, Horseshoe Spring-Lock Shingles, Hip Rolls, Ridging, Crestings, Finials, &c. Illustrations and price-lists are given of these goods, with descriptions and suggestions as to the style of buildings to which the various patterns are best adapted.

GURNEY HOT WATER HEATER COMPANY, Boston: Gurney Hot Water Heaters. Attention is directed to the Double Crown Heaters, as having a wide range of heating power, also to the Gurney No. 100 Series, and the 300 Series. Illustrations are given of these and other Heaters, also of Radiators, Wall Coils, &c.

OSGOOD & THOMPSON, Binghampton, N. Y.: United States Standard Scales. Particular attention is called to their line of Portable Scales, which are referred to as being manufactured from only the best materials, nicely finished, and guaranteed in every respect. They state that their Combination Wagon Scale has been on the market over 15 years. Their Wagon Scale is made from 3 to 10 ton capacity, and it is stated is especially adapted to the Hardware trade, as it is small in bulk, and can be easily handled.

JOHN BELLAMY, dealer in Hardware, 27 Eliot street, Boston, has disposed of his stock, fixtures and good will to H. M. Sanders, who for the past ten years has been in his employ. The style of the new firm is H. M. Sanders & Co.

Exports.

PER BARK W. B. FLINT, MARCH 21, 1892, FOR ADELAIDE, AUSTRALIA.

By Meriden Britannia Company.—2 packages Plated Ware.
By Edward Miller & Co.—6 packages Lampware.
By Meriden Britannia Company.—5 boxes Silver Ware.
By Edward Miller & Co.—24 boxes Lamp Goods.
By W. H. Crossman & Bro.—2 cases Hardware, 2 cases Mangles, 1 case Hardware, 1 case Scythes, 26 cases Axes, 6 Cases Hay Knives.
By McLean Bros. & Rigg.—10 cases Nails, 1 case Door Springs, 7 packages Lampware, 1 case Locks, 1 case Door Springs, 15 cases Bird Cages, 1 case Shears, 1 case Axes, 34 cases Cartridges, 2 cases Agateware, 2 cases Bench Screws, 1 case Air Rifles.
By H. W. Peabody & Co.—3 cases Hardware, 1 case Tools, 1 case Staples, 8 cases Hardware, 2 cases Tools, 1 case Oil Stones, 4 cases Hardware, 3 cases Graniteware, 9 dozen Thermometers, 3 cases Garden Hose, 5 cases Cartridges, 2 cases Fire Arms, 2 cases Farming Implements, 2 cases Oil Stones, 14 cases Hardware, 2 cases Lampware, 5 cases Plated Ware, 1 case Granite Ware, 4 packages Hardware, 1 case Hardware, 1 case Fly Traps, 1 case Egg Beaters, 2 cases Lampware, 1 case Cork Pullers, 2 cases Bird Cages.
By R. H. Dana & Co.—25 cases Axes, 5 cases Agricultural Implements.

PER SHIP GERMANIC, MARCH 21, 1892, FOR MELBOURNE, AUSTRALIA.

By W. & B. Douglas.—6 packages Pumps.
By Springer Torsion Balance Company.—12 Scales.
By Edward Miller & Co.—5 packages Lamp Goods.
By Manhattan Brass Company.—22 barrels Lamp Goods.
By Jos. Dixon Crucible Company.—3 packages Crucibles.
By Meriden Britannia Company.—4 boxes and 13 packages Silver Plated Ware.
By Peck, Stow & Wilcox Company.—9 boxes Hardware.
By R. W. Forbes & Son.—4 cases Tacks.
By Sargent & Co.—7 cases Hardware, 2 packages Money Drawers.
By Alfred Field & Co.—1 case Rivets, 1 case Tacks, 1 case Nails, 1 case Drills, 1 case Tacks, 2 cases Nuts, 5 packages Hardware, 4 cases Tacks, 1 case Drills.
By Arkell & Douglas.—3 cases Tacks, 1 case Tin Ware, 1 case Pencils, 36 cases Lawn Mowers, 200 reels Barb Wire, 5 kegs Nails, 1 package Lamp Ware, 1 case Hoes, 1 case Rakes, 4 cases Wire, 4 cases Nails, 2 cases Wringers, 3 cases Axles, 217 cases Axes, 24 cases Bolts, 18 cases Tools, 13 cases Hardware.
By Australasian-American Shipping Co.—3 cases Saws, &c., 11 cases Axes, 9 barrels Wire, 1 case Sandpaper, 50 cases Axes
By S. Hoffnung & Co.—2 cases Gun Implements, 1 crate Picks.
By Winchester Repeating Arms Company.—35,000 Cartridges.
By R. H. Dana & Co.—1 case Rakes, 1 case Hardware, 1 case Bit Braces, 1 case Drills, 1 case Pencils, 3 cases Bolts, 2 cases Washita Stones.
By W. H. Crossman & Bro.—3 cases Nails, 40 cases Loaded Cartridges, 1 package Coffee Mills, 1 case Hay Knives, 1 case Hay Forks, 1 case Oil Stones, 1 case Traps, 5 cases Hatchets, 2 casks Lamp Goods, 6 cases Axes, 12 cases Hardware, 32 cases Lamp Goods, 1 case Gun Implements, 1 case Drills, 1 case Cartridges, 1 package Bolt Clippers, 1 case Fishing Tackle, 2 cases Rakes, 5 cases Iron Bolts, 10 cases Hardware, 1 case Barometers, 1 case Hoes, 3 cases Tacks.

PER BARK MARY E. RUSSELL, MARCH 23, 1892, FOR DUNEDIN, NEW ZEALAND.

By Lalance & Grosjean Mfg. Company.—5 cases Household Utensils.
By Hartley & Graham.—14 cases Cartridges, 1 case Fire Arms.
By E. T. Hopkins.—6 cases Lamps.
By W. K. Freeman.—3 cases Axles, 1 box Hardware, 13 cases Axes, 6 cases Loaded Shells.
By R. W. Forbes & Son.—9 crates Churns, 1 case Hay Forks, 3 cases Saws, 5 cases Britannia ware.
By Mailler & Quereau.—2 boxes Hardware.
By W. H. Crossman & Bro.—1 crate Churns, 1 case Hardware, 2 packages Lampware, 13 packages Hardware.
By Strong & Trowbridge.—2 cases Rivets.
By Arkell & Douglas.—19 cases Hardware, 2 cases Nails, 6 cases Axes, 3 cases Wringers.
By H. W. Peabody & Co.—1 case Lamp Goods, 1 cask Pumps, 4 cases Hardware, 1

case Nails, 8 cases Hardware, 4 cases Scales, 2 packages Lampware, 20 packages Hardware, 18 cases Cartridges, 9 cases Horse Nails, 1 case Farming Implements, 8 packages Hardware, 10 cases Nails, 12 packages Stoves, 7 packages Hardware, 3 cases Wringers, 23 packages Lawn Mowers, 11 cases Nails, 16 cases Horse Nails, 1 cask Lamp Goods, 4 cases Hardware, 9 packages Lampware, 3 cases Hardware, 27 cases Hardware, 32 packages Stoves, 2 cases Wringers, 2 packages Lampware, 2 packages and 3 cases Hardware, 1 case Hoes.

By F. B. Wheeler Copany.—10 cases Hardware, 16 crates Stoves, 4 cases Wringers, 2 packages Hardware.

FOR DUNEDIN AND LYTTLETON.

By R. W. Cameron & Co.—11 cases Pumps, 1 case Axles, 1 case Egg Beaters, 6 cases Hatchets, 5 cases Axes, 8 packages and 4 cases Hardware, 14 packages Implements, 16 packages Lawn Mowers, 9 cases Horse Nails, 1 hogshead Pumps, 1 case Whetstones, 1 case Saws, 1 case Wrenches, 1 case Hay Rakes, 1 case Hoes, 2 cases Hardware, 1 case Hatchets, 2 cases Hardware, 1 case Axles, 1 case and 1 box Hardware.

FOR LYTTLETON.

By A. Field & Co.—1 case axles.

By W. H. Crossman & Bro.—2 packages Iron Fittings.

By K. W. Forbes & Son.—2 cases Plated Ware, 4 cases Hardware, 1 case Britannia Ware, 1 case Lampware, 2 cases Nuts.

By F. B. Wheeler Company.—10 packages Hardware, 1 case Razor Strops, 1 barrel Lampware, 4 packages Tinware.

By E. Miller & Co.—55 packages Lamp Goods.

By Jos. Dixon Crucible Company.—1 hogshead Crucibles.

By Coombs, Crosby & Eddy Company.—3 cases Tools, 1 crate Churns.

By G. B. Nicholson.—2 cases and 2 barrels Tinware.

By Arkell & Douglas.—69 cases Mowers, 20 cases Hardware, 11 cases Axes, 6 crates Stoves.

By Coombs, Crosby & Eddy Company.—2 packages Tackle Blocks, 1 bundle Forks, 1 case Hardware.

By the F. B. Wheeler Company.—2 cases Axes, 23 cases Hardware, 4 cases Churns, 4 cases Hardware.

By H. W. Peabody & Co.—4 packages Hardware, 1 box Pumps, 3 cases Kitchenware, 17 packages Hardware, 21 cases Nails and Rivets, 4 packages Hardware.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Among both manufacturers and jobbers of Paints, Colors, &c., the favorable reports made last week have been duplicated and, in not a few instances, the distribution would appear to have been on even a larger scale. In short, the volume of business is evidently well up to the full average volume for the season, if, indeed, not ahead of that of the corresponding period last year. This fact of itself affords gratification to all persons interested, but, with such conditions existing in the face of absence of anything in the nature of outside stimulating influences, the prevailing state of affairs is particularly assuring, indicating as it does a heavy consumption. Competition keeps prices very low in some departments, but the only change of any importance the past week has been on Paris Green, particulars of which are given below, and, taken as a whole, values can fairly be termed steady.

White Lead.—Corroders have experienced another lively week. Those whose brands stand particularly high in the esteem of consumers have been very actively engaged filling orders, and state that deliveries have run heavier than in any previous week since the opening of the spring season, while in no quarter does the movement appear to have been at all disappointing. The movement of mixed Leads has not run as uniformly good, but the brands that have given best satisfaction in the past are more than holding their own in the current movement. Prices all along the line stand practically as they have been for some time past, and the general market shows fairly firm tone.

Red Lead.—American product has been selling very fairly in a routine way at old prices, and the market is bare of new feature. English has been rather quiet, but the business passing is at full former prices.

Litharge.—Nothing new has developed in the market for this commodity. The movement of all grades is of regulation order, with the aggregate fully up to the average for the season, and former prices are adhered to.

Orange Mineral.—Nothing outside of the ordinary experience has been encountered. Demand still runs along in about the usuel way, involving a considerable amount of stock in the aggregate, and prices remain almost stationary.

Oxide Zinc.—New orders for domestic do not appear to be above the average in size or number, but sales agents state that deliveries continue to take up a large portion of the current production and the market remains in good shape, with former prices ruling. Deliveries last month by the New Jersey Zinc Company were 7500 barrels, not 7500 tons, as a slip of the pen made it. In foreign brands there is about the usual trade, with movement somewhat larger than it was early in the month, and prices remain without change.

Paris Green.—The associated manufacturers have agreed upon list prices for the coming season. The figures are somewhat lower than those at which the season opened last year, and conform in a good measure to the reduction that has taken place in cost of raw material. The new list is as follows:

	In Lots of			
	10,000 lbs. or over.	5000 lbs. or over.	1000 lbs. or over.	less than 1000 lbs.
Arsenic kegs or casks	13¾c	14¼c	14¾c	15½c
Kegs of 100 to 175 lbs	14	14¾	15¼	16
14, 28 and 56-lb. iron cans or boxes, net weight only	15½	16¼	16¾	17½
2 to 5-lb. paper boxes	15½	16¼	16¾	17½
1 lb. paper boxes	16	16¾	17¼	18
½ lb. paper boxes	18	18¾	19¼	20
¼ lb. paper boxes	20	20¾	21¼	22

The above prices are f.o.b. New York, Boston, Springfield, Mass., or Philadelphia—terms, payable July 1, 1892; discount 6 % per annum for unexpired time. No brokerage or commission allowed to buyers. One pound to 5-pound tin boxes put up to order at an advance of ½¢ over prices of paper boxes of similar size; ½ lb and ¼ lb not packed in tins under any circumstances. Outside manufacturers, as far as can be learned, are not seeking business at prices lower than the association rates. Thus far there has been only a fair response from buyers, and the presumption is that a very fair stock was carried over from last season.

Colors, &c.—No new feature has developed in the market for Dry or Oil Colors. Business, throughout, is of good average volume for the season and prices remain almost stationary. Ready-Mixed Paints appear to have fared quite as well as they did last week and are without change in value.

Miscellaneous.—Arrivals of Block Chalk have been moderate and the few invoices at hand were moved out at about previous prices. Whiting, Paris White and Putty are without change as to price and meet with very fair sale.

Oils and Turpentine.

In the way of positively new feature there is nothing to note for the week under review apart from a resumption of operations in Crude Sperm and Crude Whale Oils, in which both export and home trade buyers have figured with some prominence. Operations in all other Oils have been carried on in a perfunctory manner, yet make a very good showing all told, while prices, with some few minor exceptions, show remarkably uniform steadiness. The general situation is free from disturbing conditions such as need cause uneasiness on the part of buyers; if anything, the tendency is toward better prices rather than any movement in the reverse direction.

Linseed Oil.—There continues to be a good steady trade in city brands, and the offering of out-of-town product in this quarter is still moderate. The cost of seed has averaged a trifle higher. Oil Cake, on the other hand, sells at low and unsatisfactory prices. That circumstance alone causes crushers to stand very firmly on prices for Oil, but the latter are supported in a good degree by fairly active demand for the product, and it is obvious that harmony existing among manufacturers also serves to permit the adjustment of prices to existing conditions.

Cotton-Seed Oils.—The higher prices established of late have had the effect of prompting more conservative action on the part of buyers, but business is still of seasonably good volume, and that, along with the fact that supplies are well under control, keep the market quite strong, despite very limited demand from export buyers. Prime quality crude has been sold at 27¢ @ 28½¢, choice do. at 29¢, prime summer yellow at 31¢ @ 32¢ and prime winter yellow at 37½¢ @ 38¢. The highest prices were on the latest dealings.

Lard Oil.—City pressers are still moving out a considerable portion of their current production on contracts and secure enough new orders to keep matters in good shape. Prices are therefore held firmly at 57¢ for prime, although strictly first-class Western product is picked at 56¢ and occasionally a good article at 1¢ less. In price of raw material there has not been sufficient variation to have any effect upon the Oil market.

Fish Oils.—About 2000 barrels crude Arctic Whale Oil have been sold here at 45¢ for export. New Bedford reports note sales there of 1000 barrels Whale for home account, and 1000 barrels crude Sperm, one-half of which was for export. In crude Menhaden there has been no recent business, but several hundred barrels recently brought back from Europe are upon the market. In the manufactured products there is about the ordinaty distribution, with prices the same as they have been for several weeks.

Miscellaneous.—No change has taken place in the market for Cocoanut Oils, and Olive Oil stands about as it was last week, although foreign advices are stronger. Red Saponified Oil has been moving rather more freely at firm prices.

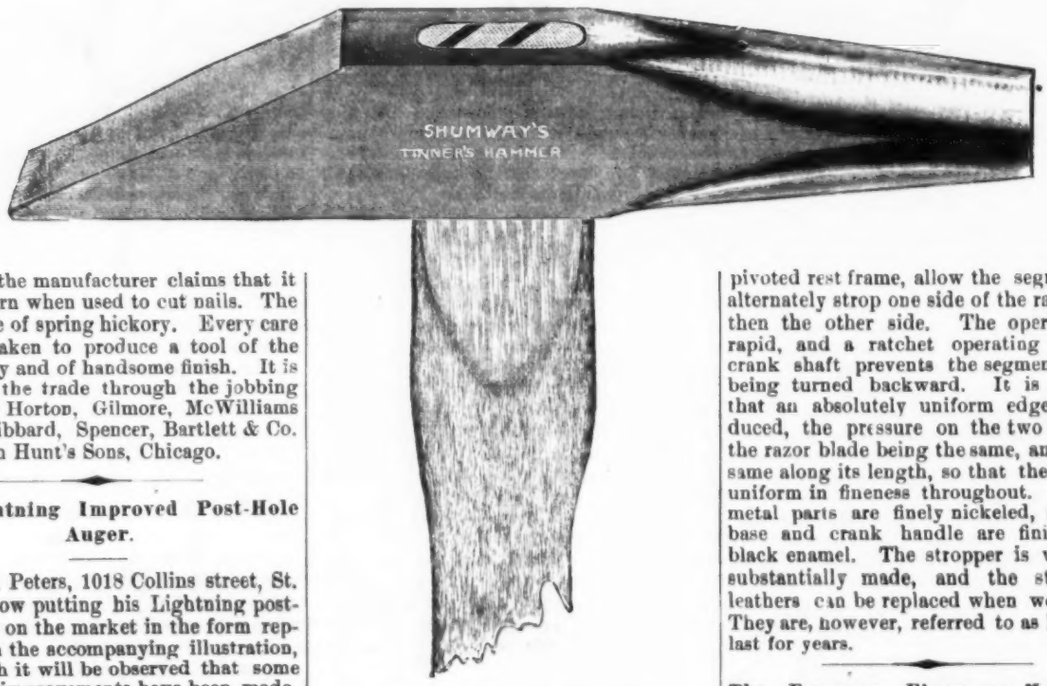
Spirits Turpentine.—In this market business has been rather slow and prices have ruled irregular, with the average a shade lower, chiefly for want of stimulating advices from the Southern centers.

It is reported that George W. Haven of Buffalo, N. Y., has been awarded the contract for constructing the mammoth shops of the New York Central Railroad at Depew, near Buffalo. It is understood that work is to be begun at once and the shops are to be ready for occupancy about November 1, 1892.

Seyfert & Bros.' Rolling Mill, at Seyfert, Pa., and Simon Seyfert's Mill at Gibralter, Pa., employing 250 and 100 hands respectively, have shut down, the former indefinitely, and the latter one week for repairs.

Shumway's Tinners' Hammer.

An illustration is herewith presented of a new tinners' hammer brought out by J. C. Shumway of 252 Lincoln avenue, Chicago. The hammer is of the full size shown in the cut. It is hand forged from cutlery steel and is designed especially for tinners and roofers. The pein has a chisel edge, and the manufacturer claims that it will not turn when used to cut nails. The handles are of spring hickory. Every care has been taken to produce a tool of the best quality and of handsome finish. It is offered to the trade through the jobbing houses of Horton, Gilmore, McWilliams & Co., Hibbard, Spencer, Bartlett & Co. and Edwin Hunt's Sons, Chicago.



Shumway's Tinners' Hammer.

The Lightning Improved Post-Hole Auger.

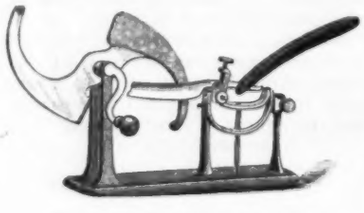
C. A. F. Peters, 1018 Collins street, St. Louis, is now putting his Lightning post-hole auger on the market in the form represented in the accompanying illustration, from which it will be observed that some important improvements have been made.

The Lightning Improved Post-Hole Auger.

In the auger as formerly made there were four knives and four points. The manufacturer states that it has been found in practice that the four points cut much faster at the bottom than the four knives at the sides, thus causing unnecessary friction and labor. In the new auger it will be perceived that there are four knives as in the old pattern, but only two points, thus, the manufacturer points out, increasing the working capacity of the auger and at the same time reducing the labor of operating it. The friction being less, the auger can be turned in the soil more rapidly and with greater ease. It can be used equally well in gravel, sand or clay, soil or loam, either wet or dry. Attention is called to the fact that no downward pressure is necessary in using the auger, which acts in the soil the same as a screw, drawing itself down when turned. With it the manufacturer claims one man can bore from 150 to 200 holes to a depth of 30 inches in a day. The cutting knives are made of steel and can readily be removed for sharpening when they become dull by simply turning a nut. They can be sharpened on an ordinary grindstone and replaced with little labor. Four sizes of the device are made, Nos. 1, 2, 3 and 4, respectively 5, 8, 10 and 12 inches. The larger sizes are intended for well-boring and making holes for telegraph poles, and can be worked by two men. Augers to bore any desired depth are made to order. The durability and strength of this auger are also referred to by the manufacturer.

The Gladstone Razor Stropper.

Dey Patents Company, Syracuse, N. Y., for whom R. Perrin, 224 West Fourth street, New York, is representative, are introducing a mechanical razor strop, as illustrated herewith. It consists of a base 2½ x 8½ inches in size, on one end of which are two segments of a wheel, supported upon uprights, while upon the opposite end are two supports upon which a rest frame is pivoted. Opposite sides of the segments are covered, first with felt, over which is hog skin, while the ends of the segments are curved in opposite directions. Both parts of the rest frame are allowed to oscillate independent of each other, but are brought back to an upright position by means of two coil springs. In operation the razor is rigidly fastened in the rest, edge downward, by means of a set screw and clamp, and the segments of the wheel are rotated by means of the crank handle. The curved ends of the segments, together with the pivoted rest frame, allow the segments to alternately strop one side of the razor and then the other side. The operation is rapid, and a ratchet operating on the crank shaft prevents the segments from being turned backward. It is claimed that an absolutely uniform edge is produced, the pressure on the two sides of the razor blade being the same, and is the same along its length, so that the edge is uniform in fineness throughout. All the metal parts are finely nickeled, and the base and crank handle are finished in black enamel. The stropper is well and substantially made, and the stropping leathers can be replaced when worn out. They are, however, referred to as likely to last for years.



The Gladstone Razor Stropper.

The Economy Flour or Meal Bin and Aerator.

Manning, Bowman & Co., Meriden, Conn., and 57 Beekman street, New York, are offering the trade this article, as illustrated herewith. It is made of heavy tin, handsomely finished in colored japans and bronzes, with metal straps across the back for fastening to the wall when desired. It may, however, be placed on a shelf or table. When the door at the bottom of the bin is opened the sliding handle of the sieve is exposed, with a roomy space underneath for a vessel to receive the sifted flour. The bins are made in three sizes, with capacities of 25, 50 and 100 pounds.

The Economy Flour or Meal Bin and Aerator.

A credit of fifteen millions for guns demanded by the Italian Minister of War has precipitated a financial crisis, threatening the Government with bankruptcy.

Roe's Electric Reel.

Justus Roe & Sons, 52 Broadway, New York, are introducing an improved form of reel, as shown in Fig. 1, for use in connection with their steel tape chains. The reel is composed of a bronze metal frame, with a wood handle and a crank handle attached to a winding ring. This center

Fig. 1—Roe's Electric Reel.

ring, which is revolved by the handle and on which the tape is wound, is 2 inches in diameter, and is so arranged that the tape can readily be attached or removed, thus allowing the tape to be used independently of the reel if so desired. On each end of the tape is a loop, to which the handles may be attached when in use.

Fig. 2 represents the tape on the reel ready for use, and Fig. 3 shows it packed

Fig. 2.—Electric Reel with Tape.

ready for shipping, or for putting away when not in use. The tape chains are made in one piece, from 100 to 500 feet in length, and are furnished plain, nickel plated or aluminum plated. They are graduated in inches, feet, rods, varas, &c. The graduations are marked by brass rivets and copper clasps, with numbers indelibly stamped on both sides of the latter. The advantages claimed for this

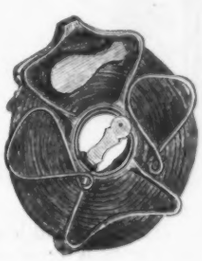


Fig. 3.—Electric Reel as Packed for Shipping.

reel are that, being made of a superior bronze metal, it will permit of very much hard and rough usage without its efficiency being injured; that it cannot easily be broken and will bend without breaking, and that the tape can be reeled or unreeled easily under any circumstances and held at any point desired.

Diamond Combined Soap and Brush Saving Holder.

This unique device is being put on the market by Slaymaker, Barry & Co., Lancaster, Pa., for whom John H. Graham & Co., 113 Chambers street, New York, are general selling agents. It is represented in the accompanying illustrations, which indicate the purpose for which it is intended. The size of this soap holder is 5 x 3¼ inches. The brush bracket shown is so made as to hold brushes of any thickness. The back legs are two wires doubled, which, when the holder is applied to the bucket, clasp the inner side of it, while an arm of the double spring in front firmly clasps the outside of

Fig. 1.—Diamond Combined Soap and Brush Saving Holders.

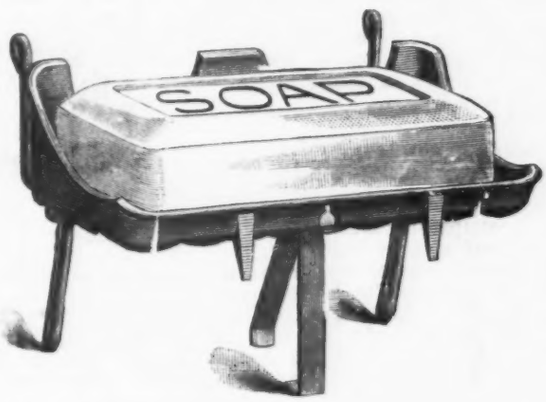


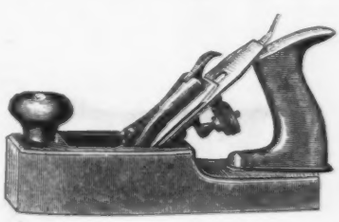
Fig. 2.—Holder Standing on its Legs and Containing Soap.

Fig. 3.—Holder Applied to a Pail and Containing Soap and Brush.

the bucket and allows for its varying thickness. The outside arm of this double spring serves as the third leg of the holder when the latter is placed on the floor or other surface. The small projections on each side of the spring retain the holder in proper position when hanging. The shape of the back and sides of the holder is referred to as such that soap can be readily and easily grasped under all circumstances. Attention is called to the fact that when the holder is clasped to the bucket the front of the device is higher than the back, thus draining off into the pail all moisture which may be on the soap after it has been removed therefrom. It is also mentioned that the brush holder is suspended right over the bucket, so that all the water from it drips into the bucket. The wires of the bracket are alluded to as passing between the rows of bristles of the brush, compressing none of them. The soap holder is made of iron and is very light, weighing less than half a pound. It is packed in cases containing one gross and one-half gross.

Patent Adjustable Wood Planes.

Ohio Tool Company are manufacturing these planes, an illustration of which is given herewith. The planes are described



Patent Adjustable Wood Planes.

as carefully made and finely finished from the best materials, and are, it is stated, thoroughly tested and put in working order before leaving the factory. The methods of adjusting all of the parts readily are referred to as such as to render the planes economical to the owner. The manufacturers mention that the method of lateral adjustment of the bit is simple and

effective, pointing out that about 2 inches of the cutter can be utilized before it is thrown aside. It is also mentioned that the lever is in a convenient location for being manipulated by the operator. The longitudinally adjusting mechanism is so made, it is stated, that the adjustment back and forward in a longitudinal direction can be readily effected, the parts for making such adjustment being easily accessible. The steel in the bits, which are warranted, is described as of superior quality, care being exercised in making and tempering.

Peckham's Economy Nail Puller.

F. I. Peckham & Co., 365 Market street, Newark, N. J., are manufacturing this nail puller, which is represented herewith.

Peckham's Economy Nail Puller.

The puller is described as made in one piece from the best quality of tool steel, and is warranted. Its simplicity, durability and effectiveness are points made in regard to it by the manufacturers, who also call attention to the fact that there is nothing to break or get out of order. The nail puller is 15 inches in length and weighs about 2¾ pounds.

Ever-Ready Screw Plate.

The Canedy Mfg. Company, Downer's Grove, Ill., are introducing this screw plate, as shown in the accompanying illustrations. Fig. 2 is a sectional view of the stock, showing the taper hole with threads to receive the die and guide. Fig. 3 shows the die with threads to fit the taper hole in the stock, and also the wedge pin for the die. The guide is shown in Fig. 4 with threads for holding in the stock and

Fig. 1.—Ever-Ready Screw Plate.

the large slots for cuttings to pass through. It is explained that the die is adjusted to fit the tap, and that the die is firmly pressed out on all sides with equal pressure against the stock by means of the taper pin, which is driven firmly down in the hole through which the die is slotted. It is claimed that all four cutting surfaces act alike in the work, and that with this means of securing the die it is held absolutely in line one side with the other, and

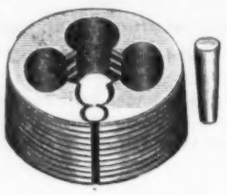


Fig. 3.—Die and Wedge Pin.

the die in line with the guide, with no possibility of getting out of line. The point is made that the die is hardened only on the cutting points, leaving the outer portion soft and tough, so that it cannot be broken while in the stock, and that the screw plate makes perfect threads at one

Fig. 4.—Guide Used in the Stock.

cut. These goods are packed one set in a box.

Daniel Mitchell of Pittsburgh has recently secured a patent for an annealing box which is claimed to be superior to the ones now in use. The box is called the Mitchell-Ehrien patent eyebeam annealing box. A 12-inch flange eyebeam is used, bent with a crab to almost a full circle and the flanges riveted together. The box is more durable than the old style one, being more heavily built and able to stand the heat better.

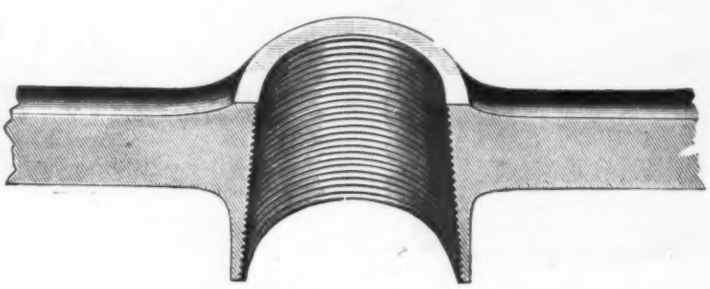


Fig. 2.—Sectional View of the Stock.

The Myers Bucket Brass Spray Pump, with Agitator.

The accompanying illustrations, Figs. 1 and 2, represent this device and the manner of operating it. The pump is manufactured by F. E. Myers & Bro., Ashland, Ohio. It is described as manufactured of material that is not affected by the poisonous arsenites used in the different formulas for spraying fruit trees, vines and shrubbery. The cylinder and all the working parts are of brass, with rubber ball valves. The manufacturers state that the pump is equipped with their combination spray nozzle, which will throw a spray as fine as mist. The pump is referred to as differing in construction from the old line of pumps of this class, and is arranged so that the heavy work is done on the down stroke of the plunger and nothing on the up stroke. The effect of this operation while pumping is alluded to as holding the pump down, and it is stated that it is not necessary to use a foot rest or in any way steady the pump while in operation, except by means of the small clamp shown, which attaches to the stave of the bucket or tub, and steadies the pump, holding it

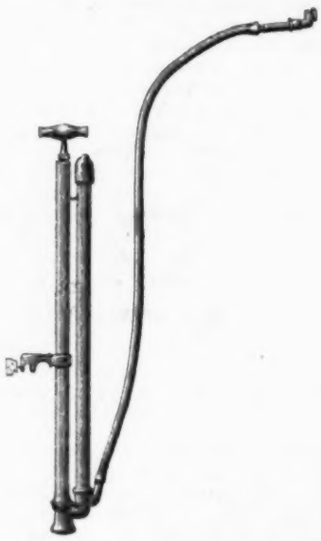


Fig. 1.—The Myers Bucket Brass Spray Pump with Agitator.

Fig. 2.—Pump in Operation.

in proper position. The pump is provided with a large air chamber, and has a valve at the bottom between the cylinder and the air chamber, whereby, it is claimed, the pressure is held uniformly in the air chamber and on the hose, so that the nozzle throws a continuous, even spray all the time, and is not affected by the movements of the plunger. The manufacturers state that the operator is enabled to keep a constant pressure on the nozzle of from 50 to 100 pounds with ordinary exertion, and mention that it will throw a solid stream 50 feet, making it of unusual value for washing windows, &c. For spraying it is constructed so that it discharges a fine jet in bottom of bucket to keep the solution thoroughly mixed and agitated, a feature which the manufacturers claim is peculiar to this pump.

A New Labor Organization.

The International Federation of Machinery Trades sprung into existence last week with a membership of 50,000. It was organized at Chicago by delegates representing skilled labor in all branches of machinery works from all parts of the country. It was decided, after a hot debate, not to allow anything political or referring to politics in the constitution. Another source of argument was the *per capita* tax. The delegates finally decided that all members of national or international machinery orders should be taxed one cent a month, and every member of a local machinery trades' council should be assessed one-half cent a month.

The most important clause of the constitution is the one declaring that nine hours shall constitute a day's work. When this shall go into effect will be decided at the next convention, which will be held in Chicago on October 3.

In speaking of the matter, John A. Penton of Detroit, the president of the new federation, said: This will be the most powerful and important labor organization in the world. Every member is a skilled mechanic, and comes from the ranks of the machinists, pattern makers, machinery molders, blacksmiths, brass workers, boiler makers, iron shipbuilders, and the Amalgamated Society of Engineers, an old country order, which has 30,000 members in this country. Some of the various trades have had two or more orders; by our plan they will be amalgamated in one body. In case of any trouble with one class of workers in any shop every man in it would stop work until the trouble was adjusted. We don't expect any strike, for it would tie up our order and many trades not under our control. There lies our power. Neither do we expect any trouble with the nine hour day, since we don't ask for ten hours' pay.

The following are the officers of the new federation: John A. Penton of Detroit, president and secretary; N. Morse of New York, vice-president; J. W. McFeely, Jr., of Chicago, treasurer; J. B. Edwards of Springfield, Ill., chairman of the executive board, the other members being D. Schantz of Chicago and C. A. McKenzie of New York.

Dr. W. E. Wadsworth, Director of the Michigan Mining School and State Geologist of Michigan, has contributed to a neat volume entitled "Lake Superior along the South Shore," an excellent sketch of the geology of the Marquette and Keweenawan districts.

The latest effort to get through the enormous bed of quicksand overlying the great Louisiana sulphur deposit has proved unsuccessful thus far. McK. Twombly, Edward Cooper, Abram S. Hewitt and other capitalists are interested in the enterprise.

Washington News.

(*From Our Regular Correspondent.*)

WASHINGTON, D. C., April 18, 1892.

The naval gun foundry at the Washington Navy Yard has just had added to its magnificent plant the great gun lathe, with a capacity for a 110 ton or 16 inch gun. The largest gun as yet authorized by Congress is the 65 ton or 13 inch. The new lathe, which bores and turns is 128 feet 11 inches in length, and was built by William Sellers & Co. of Philadelphia.

A novelty in this enormous piece of ordnance-making mechanism over other machine tools of the same character is the arrangement of the saddles. In the old machines all changes are made at the head of the lathe. In this machine provisions are made in the saddle for all changes of speed and feed for turning cylinders and tapers and screw cutting. In the ordinary boring the barrel does not revolve. In this provison is made for revolving the barrel in the opposite direction to which the gun revoives, so that the speed of the revolutions of the gun may be regulated to suit the turning.

Another feature is that the saddles are so designed as to pass the steady rests. In the foundry are other lathes—one 114 foot 6¼ inch or 14 foot gun lathe, also an 89 foot 3½ inch and a 66 foot 3¾ inch, 16 inch jacket lathes, suitable for a 10 foot gun. The ordnance work of the Naval Gun Foundry, under the supervisory control of Commodore Folger, Chief of the Ordnance Bureau, United States Navy Department, and direct control of Commander Charles O'Neill, Inspector of Ordnance, Washington Navy Yard, is now producing the most effective results. There are 1000 men now employed in the ordnance department of the yard; 140 guns are now in various stages of completion in the foundry, the forgings having been made by the Bethlehem and Midvale plants. About 116 modern guns, 16 8-inch and 100 6-inch are now afloat. This does not include a great machine and rapid-firing guns and other offensive appliances belonging to the armament of a modern vessel of war.

The large guns up to 13-inch B. and R. guns are turned out as required by the vessels as they are completed. The capacity of the gun shop during a year is estimated as follows: 3½ 12-inch, 8 10-inch, 10 8-inch, 30 6-inch; or, 16 10 inch, 8 8 inch, 30 6 inch; or, 16 10-inch, 45 6-inch: or, 84 6-inch only; or, 5 12-inch, 72 6-inch; or, 3½ 12-inch, 10 10-inch, 45 6-inch; or, 24 8-inch, 30 6-inch.

The following exhibits the advanced stage of manufacture as compared in point of time with two years ago:

Gun.	Two years ago. Days.	One year ago. Days.	Present time. Days.
4-inch	....	....	48
5-inch	....	....	55
6-inch	144	75	60
8-inch	250	150	105
10-inch	300	205	150
12-inch	....	....	270
13-inch	....	....	360

This comparison, as flattering as it is, is believed by the authorities as capable of still further advance in economy of time. The ordnance work of the navy never was in such a high state of efficiency. A few more years of peace, with a continuance of the recent liberal naval policy, will place the United States upon a par with the most formidable naval power of the globe in the effective fighting qualities of her ships. The guns for the ships, which will be completed during the present year, are being pressed forward so as to be ready when required.

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CURRENT HARDWARE PRICES.

APRIL 20, 1892.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Adjusters, Blind.
Domestic ..... ₩ doz $3.00, 33⅓%
Excelsior ..... ₩ doz $10.00 ..... 50&10&2½%
North's ..... list net @10%
Zimmerman's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils.
Eagle Anvils, ₩ ℔ 10¢ ..... 15@15&5%
Peter Wright's ..... 11@11½¢
Armitage's Mouse Hole ..... 10½@11¢
Am. Wrought, Horseshoe brand. 11@11½¢
Trenton ..... 10@10½¢
Wilkinson's ..... 10½@11¢
Moore & Barnes Mfg. Co 33⅓%

Anvil Vise and Drill—
Millers Falls Co., $18.00 ..... 20%
Chenev Anvil and Vise 35%
Allen Anvil and Vise, $8.00 ..... 40&10%
Star ..... 46&5%

Apple Parers—See Parers, Apple, &c

Augers and Bits—
Douglass Mfg. Co. } 70&10&2½
Wm. A. Ives & Co. } 70&10&2½
Humphreysville Mfg. Co. } 70&10&2½
French, Swift & Co. (F. H. Beecher, P. S. & W. Co } 70&10&2½
Rockford Bit Company } 70&10&2½
Cook's, Douglass Mfg. Co 55%
Cook's, N. H. Copper Co. 50&10@50&10&5%
Ives' Circular Lip 60%
Patent Solid Head 30%
C. E. Jenning & Co., No. 10, extension lip 40%
C. E. Jennings & Co., No. 30 ..... 60%
D. E. Jennings & Co., Auger Bits, ₩ set, 32½ quarters, No. 5, $5; No. 30, $3.50. 20%
Lewis' Patent Single Twist 45%
Russell Jennings' Augers and Bits. 25&10%
Imitation Jemings' Bits ..... 60@60&10%
Pugh's R ack 20%
Pugh's Jenning's Pattern ..... 4 ⅓
Car Bits ..... 60@60&10%
Car Bits, P. S. & W. Co ..... 60&10%
Snell's Car Bits 60%
L Hommodieu Car Bits ..... 15&10%
Forstner Pat. Auger Bits 20%
Cincinnati Bell-Hangers' Bits ..... 80&10%

Bit Stock Drills—
Horse Twist Drills ..... 50&10&5%
Standard ..... 50&10&5%
Cleveland ..... 50&10&5%
Syracuse, for metal ..... 50&10%
Syracuse, for wood (wood list). 30@30&5%
Cincinnati, for wood ..... 30&10%
Cincinnati, for metal ..... 45&10%

Expansive Bits—
Clarks' small, $18; large, $26 ..35@35&10%
Ives' No. 4, ₩ doz $60 ..... 40%
Swan's 40%
Steer's, No. 1, $26; No. 2, $22 ..... 35%
Stearns' No. 2, $48 ..... 20%

Gimlet Bits—
Common ..... ₩ gross $2.75@$3.25
Diamond ..... ₩ doz $1.25 ..... 4 &10%
Bee ..... 25@25&5%
Double Cut, Shepardson's ..... 45@45&10%
Double Cut, Ct. Valley Mfg. Co ..30&10%
Double Cut, Hartwell's, ₩ gro $5.25
Double Cut, Douglass' ..... 40&10%
Double Cut, Ives' ..... 60@60&10%

Hollow Augers—
Ives } 33⅓@
French, Swift & Co. } 33⅓&10%
Douglass' } 33⅓&10%
Bonney's Adjustable, ₩ doz $48 ..40&10%
Stearns' ..... 20&10%
Ives' Expansive, each $4.50 ..... 50&5%
Universal Expansive, each $4.50 ..... 20%
Wood's ..... 25@25&10%
Cincinnati Adjustable ..... 25&10%
Cincinnati Standard ..... 25&10%

Ship Augers and Bits—
L'Hommedieu's ..... 15&10@15&10&5%
Watrous' ..... 15&10@15&10&10%
Snell's ..... 15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

Awl Hafts—See Hafts, Awl.

Awls—
Awls, Sewing, Common ₩ gr. 85¢@90¢
Awls, Should. Peg ..... ₩ gr. $1.50@$1.55
Awls, Pat. Peg ..... ₩ gr. 35¢@$8¢
Awls, Shouldered Brad .. ₩ gr. $1.30@1 40
Awls, Handled Brad ... ₩ gr. $2.50@$3.00
Awls, Handled Scratch .. ₩ gr. $4.0(@4.50
Awls, Socket Scratch .. ₩ doz. $1.10@$1.20

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

	Plain.	Beveled.
First quality, best brands.	$7.00 @	$7.50
First qual., other brands	6.62½ @ 6.75	
Second quality	6.00	6.50

Axle Grease—See Grease, Axle.

Axles—
No. 1 .. 3½@4½¢, No. 2, 5¢@6¢ } 3% cash
Nos. 7 to 14 ..... 6@10¢ } 3% cash
Nos. 15 to 18 ..... 47½¢ } 3% cash
Nos. 19 to 22 ..... 70¢ } 3% cash
Concord Axles, loose collar ..... 4½@6¢
Concord Axles, solid collar ..... 5½@7¢
National Tubular Self-Oiling ..... 33⅓&10&5%

Bag Holders.—See Holders, Bag.

Balances—
Spring Balances 40%

	No. 2000	20	30
Chatillon, ₩ doz ...	$0.80	0.95	1.75 net

Chatillon Straight Balances 40%
Chatillon Circular Balances ..... 50&10%

Barb Wire.—See Wire, Barb.

Bars.
Crow—
Cast Steel ..... ₩ ℔ 3½¢
Iron, Steel Points ..... ₩ ℔ 3¢

Basins, Wash—
Standard Fiberware, No. 1, 10½-inch, $2; 12-inch, $2.25; 13½-inch, $2.75; 15-inch, $3.25.

Beams, Scale—
Scale Beams, List Jan. 12, '82 ..50&10@50&10&5%
Chatillon's No. 1 ..... 40%
Chatillon's No. 2 ..... 50%
Custer's 33⅓%

Beaters—
Egg—
Dover ..... ₩ doz $1.50
Duplex (Standard Co.) ..... ₩ doz $1.25
Rival (Standard Co.) ..... ₩ doz $1.00
Duplex Extra Heavy (Standard Co.) ..... ₩ doz $2.50
Bryant's ..... ₩ gro $14.00
Double (H. & R. Mfg. Co.), ₩ gro. No. 0, $12.00; No. 1, $15.00; No. 2 ..... $36.00
Easy (H. & R. Mfg. Co.) ..... ₩ gro $12.00
Triple (H. & R. Mfg. Co.) ..... ₩ gro $16.50
Spiral ..... ₩ gro $4.25 @ 4.50
Improved Acme (H. & R. Mfg. Co.) ..... ₩ gro $9.00
Paine, Diehl & Co.'s ..... ₩ gro $24.00
Silver & Co ..... ₩ doz $5.50
Culinary—
Keystone, P.D.&C., Each, No. 1, $1; No. 2, $2 ..... 20%

Bells—
Cow—
Common Wrought ..... 60&10%
Western, Sargent's list ..... 70&10%
Kentucky, "Star" ..... 20&10%
Kentucky, Sargent's list ..... 70&10%
Kentucky Durham ..... 70&10%
Dodge, Genuine Kentucky ..... 70@70&10%
Texas Star ..... 50&10@50&10&5%
Door—
Gong, Abbe's ..... 33⅓&10%
Gong, Yankee ..... 45&10%
Gong, Barton's ..... 40&10@50%
Crank, Taylor's ..... 25&10%
Crank Brooks' ..... 50&10&2%
Crank Cone's 10%
Crank, Connel's ..... 20&10%
Lever, Sargent's ..... 60&10%
Lever, Taylor's Bronzed or Plated .... net
Lever, Taylor's Japanned ..... 25&10%
Lever, R. E. M. Co.'s ..... 50&10&2%
Pull, Brook's ..... 50&10&2%
Electric—
Wollensak's 20%
Bigelow & Dowse 20%
Taylor's 20%
Hand—
Light Brass ..... 70&10%
Extra Heavy 70
White 70%
Silver Chime ..... 33⅓&10%
Globe Cone's Patent) ..... 25&10@35%
Miscellaneous—
Call ..... 40@40&5%
Farm Bells ..... ₩ ℔ 3¢@3½¢
Steel Alloy Church and School Bells. .40%

Bellows—
Blacksmiths' ..... 60&10@60&10&5%
Molders' ..... 40&10&5%
Hand Bellows ..... 40&10@50%

Belting, Rubber—
Common Standard ..... 70@10@75&5%
Standard ..... 70&5@70&10%
Extra ..... 60&10@60&10&5%
N.Y.B.&P.Co., Carbon 60%
N.Y.B.&P.Co., Diamond 50%
N.Y.B.&P.Co., Para 40%

Bench Stops—See Stops, Bench.

Benders and Upsetters, Tire.
Stoddard's Lightning Tire Upsetters. .15%
Detroit Perfected Tire Bender 15%

Bits—
Auger, Gimlet, Bit Stock Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—
Cleveland Block Co., Mal. Iron 50@50&10%
Moore's Novelty, Mal. Iron 50%
Sure Grip Steel Tackle Blocks 25%

Boards, Stove.
Wood Lined Crystal 50%
Oxidized 45%
Embossed 50%
Paper Lined Zinc 55%
Crystal 55%
Embossed 55%
New Tacoma 55%

Bolts—
Carriage, Machine, &c.—
Com. list June 10, '84 ..... 75&10&2%
Genuine Eagle, Norway, list Oct., '84 ..... 80@80&10%
Phila. pattern, list Oct. 7, '84 .. 75@75&10%
R.B.&W., old list 70%
Machine, list Jan. 1, 1890 ..... 80@80&5%
Bolt Ends, list Jan. 1, 1890 ..... 75&10@75&10&5%
Door and Shutter—
Cast Iron Barrel, Square, &c ..... 70&10%
Cast Iron Shutter Bolts ..... 70&10%
Cast Iron Chain (Sargent's list) .. 65&10%
Ives' Patent Door Bolts 60&10@60&10&5%
Wrought Barrel ..... 70@70&10%
Wrought Square ..... 70@70&10%
Wr't Shutter, all Iron, Stanley's .. 60&10%
Wr't Shutter, Brass Knob, " .. 40&10%
Wr't Shutter, Sargent's list ..... 60&10%
Wr't Sunk Flush, Sargent's list .. 55&10%
Wr't Sunk Flush, Stanley's list .. 50&10%
Wr't B.K. Flush. Com'n " .. 25&10%

Stove and Plow—
Stove 60%
Plow ..... 60&5%
R. B. & W., Plow 55%
Tire—
Common, list Feb. 28, '83 ..... 65%
Port Chester Bolt and Nut Company: Empire, list Feb 28, '83 ..... 65%
Keystone, Philadel., list Oct, '84 .. 80%
Norway, Phila., list Oct. '84 ..... 75%
American Screw Company: Norway, Phil., list Oct. 16, '84 ..... 75%
Eagle, Phil., list Oct. 16, '84 ..... 80%
Philadel., list Oct. 16, '84 ..... 80%
Bay State, list Feb. 28, '83 ..... 65%
R.B.&W., Philadel., list Oct. 16, '84 .. 80%

Borers, Tap.
Common and Ring ..... 20&10%
Ive's Tap Borers ..... 33⅓&5%
Enterprise Mfg. Co ..... 20&10@30%
Clark's ..... 33⅓@35%

Borax ..... ₩ ℔ 9½@10½¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon.
Per ℔ ..... 2½¢

Braces.—
American Bit Brace Co.:
Nos. 10, 12, 20 ..... 60&10%
Nos. 11, 21, 24, 27 ..... 70&10%
Nos. 22, 23, 25 ..... 60&10&5%
Nos. 13, 26, 36, 37 ..... 70&10&5%
Ball Braces, net ..... $1.12 to $1.25
Amidon's
Barker's Imp'd Plain ..... 75&10@80%
Barker's Imp. Nickeled ..... 65&10@70%
Ratchet ..... 75&10@80%
Eclipse Rachet 60%
Globe Jawed ..... 40@40&10%
Corner Brace ..... 40@40&10%
Universal, 8 in., $2.10; 10 in. $2.25
Buffalo Ball ..... $1.10@$1.1
Barber's,
Nos. 10 to 16 ..... 50@50&10%
Nos. 30 to 33 ..... 60@50&10%
Nos. 40 to 63 ..... 50&10@50&10&5%
Saxton's,
Barker's Imp. Polished ..... 75&10@80%
Barker's Imp. Nickeled ..... 65&10@70%
Ratchet, Polished ..... 60&10@60%
Ratchet, Nickeled ..... 40&10@50%
Buffalo Ball ..... net, $1.10@$1.15
Bartholomew's,
Nos. 25, 27 and 30 ..... 50&10@60&5%
Nos. 117, 118, 119 ..... 70@70&5%
Common Ball, American ..... $1.00@$1.10
Fray's Genuine Spofford's .. 50&5@50&10%
Fray's No. 70 to 120, 81 to 123, 207 to 414 ..... 50&10%
Ives' New Haven Novelty ..... 70@70&5%
New Haven Ratchet ..... 60&5@60&10%
Barber Ratchet ..... 60&5@60&10%
Barbers ..... 60&5%
Spofford ..... 60&5@60&10%
Osgood's Ratchet ..... 40&10@50%
P. S. & W. Co., Peck's Patent 60%

Brackets—
Shelf, plain.
Regular list ..... 65@70%
Sargent's list ..... 66⅔@66⅔&10%
Shelf, fancy.
Sargent's list ..... 66⅔@66⅔&10%
Other makes at a wide range of prices.

Bright Wire Goods—See Wire.

Broilers—

Henis' Self.	7 Inch.	9	10	9x11
Beating.	Per doz	$4.50	5.50	6.50

New Haven 50%
Wire Goods Co ..... 55&10%
Morgan Odorless ..... ₩ doz $12, 33⅓%

Buckets, Well.
Galvanized—
Hill's ..... ₩ doz, 12 qt, $4.25; 14 qt, $5.25
Iron Clad ..... ₩ doz. 14 qt, $4.25@$4.50
Helwig's Flat Iron Band $3.75
Helwig's Wired Top ..... ₩ doz $4.00

Bull Rings—See Rings, Bull.

Butchers' Cleavers—See Cleavers Butchers'.

Butts—
Brass—
Wrought Brass ..... 80@80&10%
Cast Brass, Tiebout's 50%
Cast Brass, Fast ..... 33⅓&10%
Cast Brass, Loose Joint ..... 33⅓&10%
Cast Iron—
Fast Joint, Narrow ..... 50&10&5@60%
Fast Joint, Broad ..... 50&10@60%
Loose Joint } .70&10 @75%
Loose Joint, Japanned } .70&10 @75%
Loose Joint, Jap. with Acorns } .70&10 @75%
Parliament Butts } .70&10 @75%
Mayer's Hinges } .70&10 @75%
Loose Pin, Acorns } .70&10 @75%
Loose Pin, Acorns, Japanned } .70&10 @75%
Loose Pin, Acorns, Japanned, Plated Tips } .70&10 @75%
Wrought Steel—
Fast Joint, Narrow } .70&10 @75%
Fast Joint, Lt. Narrow } .70&10 @75%
Fast Joint, Broad } .70&10 @75%
Loose Joint, Broad } .70&10 @75%
Table Butts, Back Flaps, &c } .70&10 @75%
Inside Blind, Regular } .70&10 @75%
Inside Blind, Light } .70&10 @75%
Loose Pin } .70&10 @75%
Bronzed Wrought Butts 80%

Calipers—See Compasses.

Calks, Toe—
Gautier, One Prong, Blunt ..... 5½@6¢
Burke's, One Prong, Blunt ..... 5½@6¢
Burke's, Two Prong, Blunt ..... 7½@8¢
Burke's, One Prong, Sharp ..... 6½@7¢

Can Openers—See Openers Can.

Caps—
Percussion, ₩ 1000—
Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's ..... 35@37¢
E. B. Trimmed Edge, 1-10's ..... 47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's .... 47@50¢
Musket Waterproof, 1-10's ..... 50@55¢
G. D ..... 27@30¢
S. B. Genuine Imported ..... 45¢
Eley's E. B ..... 55¢ @ 58¢
Eley's D Waterproof, Central Fire .. $1.00
Primers—
Berdan Primers, $1.00 ..... 2%
B. L. Caps (for Sturtevant Shells) $1.00. 2%
All other Primers, $1.20 ..... 2%

Cards—List January 28, 1891.
Watson's Cotton, Wool, Horse and File 25%

Carpet Stretchers—See Stretchers, Carpet.

Carpet Sweepers—See Sweepers Carpet.

Cartridges—
Rim Fire Cartridges ..... 50&5&2½%
Rim Fire Military ..... 15&2½%
Cent. Fire, Pistol and Rifle ..... 25&5&2½%
Cent. Fire, Military and Sporting ..... 15&5&2½%
Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts.
Blank Cartridges, 22 cal., $1.75 ..... 2%
Blank Cartridges, 32 cal., $3.50 ..... 2%
Primed Shells and Bullets ..... 15&5&2½%
S. B. Caps, Round Ball, $1.75 ..... 2%
S. B. Caps, Con. Ball, Swgd., $2.00 ..... 2%

Casters—
Bed ..... } Brass ..... 55@55&10%
Plate ..... } Others ..... 50@50&10%
Shallow Socket ..... } Brass ..... 55@55&10%
Deep Socket ..... 40&10%
Yale Casters, list May, 1884 ..80&10@40%
Yale, Gem ..... 60@60&5%
Martin's Patent (Phœnix) ..... 45&10@50%
Payson's Anti-friction 70%
Payson's Truck 60%
Giant Truck Casters 30%
Stationary Truck Casters ..... 50&10%
Socket Truck Casters 50%

Cattle Leaders—See Leaders, Cattle.

Cement.
Victor Elastic ..... 5 ℔ pails ₩ ℔ 5¢

Chain—
Trace, Wagon and Fancy Chains, List revised April 21, 1890 ..... 60@60&10%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.60	5.45	4.45	3.80	3.65	3.50	3.40	3.30

Less than cask lots, add ½¢@½¢ ₩ ℔.
German Coil, list Oct. 6, 1890 ..60@60&5%
German Halter Chain, list Oct. 6, 1890 ..... 60@60&5%
Covert Halter ..... 60&2%
Covert Traces ..... 35&2%
Covert Heel Chain ..... 50&2%
Oneida Halter Chain ..... 60@60&5%
Galvanized Pump Chain ..... ₩ 5½@6¢
Jack Chain, Iron ..... 75&10@80%
Jack Chain, Brass ..... 75@75&10%

Chalk—
White, case lots, ₩ gr 50¢; small lots 55 @55¢
Red, case lots ... ₩ gr 67¢; small lots 77 @75¢
Blue, case lots ... ₩ gr 75¢; small lots 85¢
See also Crayons.

Chalk Lines—See Lines.

Chisels—
Socket Framing and Firmer.
P. S. & W. } .75 @ 75&10%
New Haven } .75 @ 75&10%
Witherby } .75 @ 75&10%
Mix } .75 @ 75&10%
Ohio Tool Co } .75 @ 75&10%
Douglass ..... 75@75&5%
Buck Bros 30%
Merrill ..... 60&10@60&10&2%
L. & I. J. White ..... 30@30&5%
Tanged and Miscellaneous.
Tanged Firmers ..... 40&10@50%
Butchers' ..... $4.75@$5.00
Spear & Jackson's ..... $5 to $
Buck Bros 30%
Cold Chisels, ₩ ℔ ..... 15@16%

Chucks—
Beach Pat ..... each, $5.00 ..... 30%
Morse's Adjustable, each, $7.00, 20@20&5%
Danbury ..... each, $6.00, 30@30&5%
Syracuse, Bals Pat 25%
Graham Patent 33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks 33⅓%
Universal Lathe Chucks 40%
Independent Lathe Chucks 40%
Drill Chucks 15%
Union Mfg. Co.,
Victor $8.50, 25%
Combination 40%
Universal 40%
Independent 40%

Churns.
Tiffin Union, each, 5 gal. $3.25; 7 gal. $3.75; 10 gal. $4.25.
McDermaid Star Barrel Churn, each 6 gal., $2.60; 10 gal., $2.75 15 gal. 2.00 20 gal., 3 25.

Clamps—
R. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....30@30&10%
Stearn's Adjustable Cabinet and Corner.....30@30&10%
Cabinet, Sargent's.....60%&10%
Carriage Makers', Sargent's.....70&10%
Carriage Makers', P., S. & W. Co..40&10%
Eberhard Mfg. Co.....40&5@40&10%
Warner's.....40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenters', Cincinnati.....25&10%

Cleavers.
Butchers'.
Bradley's.....25@30%
L. & I. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

Clips—
Norway, Axle, ¼ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16..65&5%
Superior Axle Clips.....66⅔&5@70%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought-Iron Felloe Clips.....₩ lb, 5½¢
Steel Felloe Clips.....₩ lb, 5¢
Baker Axle Clips.....25%

Cloth and Netting, Wire—See Wire, &c.

Cockeyes.....50%

Cocks, Brass.
Hardware list.....50&2%

Coffee Mills—See Mills, Coffee

Collars, Dog, &c.
Medford Fancy Goods Co.....40&10%
Embossed, Gilt, Pope & Steven's list.....30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%
Chapman Mfg. Company.....50&10@60%

Combs, Curry.
Fitch's.....50&10@50&10&10%
Rubber, per doz $10.00.....20%
American Curry Comb Co.....Net prices

Compasses, Dividers, &c.—
Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers....25&10%
Lock Calipers and Dividers.....25%
Combination Dividers.....25%

Coopers' Tools—See Tools, Coopers'.

Cord—
Sash.
Common.....₩ lb, 10¢ @ 11¢
Patent, good quality.....₩ lb, 12 @ 12¢
White Cotton Braided, fair, ₩ lb, 24¢@25¢
Common Russia Sash.....₩ lb, 12½¢@13¢
Patent Russia Sash.....₩ lb, 14¢
Cable Laid Italian Sash.....₩ lb, 21@22¢
India Cable Laid Sash.....₩ lb, 12¢
Silver Lace—
A Quality, White, 50¢.....25 %
A Quality, Drab, 55¢.....25 %
B Quality, White, 30¢.....10 %
B Quality, Drab, 35¢.....10 %
Sylvan Spring Extra Braided White,34¢
Sylvan Spring, Extra Braided, Drab..39¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....26¢
Massachusetts, White.....26¢
Samson—
Braided, White Cotton, 50¢..30@30&5%
Braided, Drab Cotton, 55¢...30@30&5%
Braided, Italian Hemp, 55¢..30@30&5%
Braided, Linen, 80¢.....30@30&5%
Tate's Cotton Braided, White, ₩ lb, 28¢.10%
Wire Picture.
Braided or Twisted.....75&10%

Corkscrews—See Screws, Cork.

Corn Knives and Cutters—See Knives, Corn.

Crackers, Nut—
Table (H. & B. Mfg. Co.).....40%
Blake's Pattern.....₩ doz $2.00, 10%
Turner & Seymour Mfg. Co.....50%

Cradles—
Grain.....50&5&2@50&10&2%

Crayons.
White Crayons, ₩ gross.....10¢
D. M. Stewart Mfg. Co., Metal Work—
₩ gr, $2.50.....35%
D. M. Stewart Mfg. Co., Rolling Mill, ₩ gr, $2.50.....35%
See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.

Curtain Pins—See Pins Curtain.

Cutters—
Meat.
Dixon's ₩ doz.....40&5%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Woodruff's ₩ doz.....40&5%

Nos.	100	150
	$15.00	$18.00

Hales Pattern ₩ doz.....70@70&5%

Nos.	11	12	13
	$27.00	$33.00	$45.00

American.....30%

Nos.	1	2	3	4	5
Each	$5	$7	$10	$25	$50

Nos.	10	12	22	32	42	60
Each	$3	$2.50	$4	$6	$15	

terprise.....30%
at American Meat Cutter.....30%

Nos.	112	116	118	120	122
Each	$2.00	$2.75	$3.00	$2.50	$4.00

Miles' Challenge ₩ doz.....45@45&10%

Nos.	1	2	3
	$32.00	$30.00	$40.00

Home No. ..... ₩ doz $26.00, 55&10%

Draw Cut, each:

Nos.	5	2	6	8
	$50	$75	$80	$225

.....20@25%
Beef Shavers (Enterprise).....30&10@30%
Little Giant (P. S. & W. Co.).....50%
Chadborn's Smoked Beef Cutter, ₩ doz $66.00
Tobacco.
Champion.....20&10@30%
All Iron.....₩ doz $4.25
Nashua Lock Co.'s..₩ doz, $13.00 50@55%
Wilson's.....55%
Sargents'o.....₩ doz, $24, 55&10%
Acme.....₩ doz $30.00, 40%
Washer.
Smith's Pat.....₩ doz $12.00, 20&10&10%
Johnson's.....₩ doz $11.00, 33⅓%
Penny's.₩ doz Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₩ doz $16.00, 60&10%
Bonney's.....30&10%
Cincinnati.....25&10%

Dampers, &c—

Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Diggers, Post Hole, &c.—
Samson Post Hole Digger, ₩ doz $36.00, 25%
Fletcher Post Hole Augers, ₩ doz $36, 20%
Eureka Diggers.....₩ doz $12.50@14.00
Leed's.....₩ doz $8.00@9.00
Vaughan's Post Hole Auger, ₩ doz $13.00@14.00
Kohler's Little Giant.....₩ doz. $18.00
Kohler's Hercules.....₩ doz. $15.00
Kohler' New Champion.....₩ doz. $9.00
Schmiedler.....₩ doz. $18.00
Ryan's Post Hole Diggers..₩ doz $24.00
Cronk's Post Bars, ₩ doz $60.00, 50&5@50&10%
Gibbs Post Hole Digger.....₩ doz $15.00
Imperial.....₩ doz $7.50
Shimer's Hollow Handle,₩ doz, $24..50%

Dividers—
See Compasses.

Dog Collars—See Collars, Dog, &c.

Door Springs—See Springs, Door.

Drawers.
Money, ₩ doz.....$18&$20

Drawing Knives—See Knives, Drawing.

Drills and Drill Stocks—
Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50,20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 25%
Breast, Bartholomew's.....each $2.50, 25&10@40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll s.....25%
Ratchet, Parker's.....20@20&5
Ratchet, Whitney's.....20&10%
Retchet, Weston's.....20@25%
Ratchet, Moore's Triple Action..35@30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $13.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools.....$1.75@$1.85
Twist Drills—
Cleveland.....50&10&5%
Diamond, W. & B.....50&10&5%
Graham's Pat. Groove Shank 50&10&5%
Morse.....50&10&5%
New Process.....50&10&5%
Standard.....60&10&5%
Syracuse (Metal list).....50&10%

Drill Bits or Bit Stock Drills—
See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans—See Pans, Dripping.

Drivers, Screw.
Douglas Mfg. Co.....20&20&10%
Disston's.....50%
Buck Bros.....30%
Stanley R. & L. Co.'s
No. 64, Varnished Handles.....65&10%
No. 86.....70&10%
Sargent & Co.'s
No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 60. .....60%&10&10%
P. S. & W.....70 %
Knapp & Cowles:
No. 1.....60&20@70%
No. 2.....60&10&10@70&5%
No. 3.....60&5@60&10%
Nos, 4 and 00, Acme and Ideal..50& 5&50&10&5%
Stearns'.....25&10&5%
Gay & Parsons.....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Ellrich's Socket and Ratchet..25@25&10%
Allard's Spiral, new list.....25%
Kolb's Common Sense ₩ doz $6.00.25&10%
Syracuse Screw-Driver Bits...30&30&5%
Screw-Driver Bits.....₩ doz. 50@75¢
Screw-Driver Bits, Parr's.....₩ gro $6.25
Fray's Hol. Hdle. Sets. No. 3, $12.00, 25@25&10%
P. D. & Co.'s all Steel.....50%
Cincinnati.....25&10%
Brace Screw Drivers.....25&10%
Buck Bros.' Screw-Driver Bits.....

Egg Beaters.—See Beaters, Egg.

Egg Poachers.—See Poachers, Egg.

Electric Bell Sets.—See Bells, Electric.

Emery.—No. 4 to No. 54 to Flour, CF

	46 gr.	150 gr.	F. FF.
Kegs, ₩ b	4½¢	5 ¢	2½¢
½ kegs, ₩ b	4½¢	5½¢	2½¢
¼ kegs, ₩ b	5 ¢	5½¢	3 ¢
10-b cans, 10 in case	6 ¢	6½¢	5 ¢
10-b cans, less than 10	10 ¢		

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—See Pins, Escutcheon.

Escutcheons.
Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Expanded Metal.
List No. 5.
Lathing.....10%
Fencing, Painted Sheets.....20%
Netting, Painted Sheets.....20%
Door Mats, Galvanized.....25%
Window Guards, Paneled.....15%
Tree Guards, Paneled.....15%

Extractors, Lemon Juice—See Squeezers, Lemon.

Fasteners, Blind—

Mackrell's, ₩ doz. $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ₩ gr..60&10%
Van Sand's Old Pat., $15.00 ₩ gr..55&10%
Austin & Eddy No. 2008 ₩ gr.....$9.00
Security Gravity, ₩ gr.....$9.00
Zimmerman's.....45 %

Faucets.—
Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&3%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10@ 60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₩ doz $36.00.....30&10%
Lane's, ₩ doz $36.00.....25&10%
Victor, ₩ doz $36.00.....25&10%

Felloe Plates—See Plates, Felloe.

Fifth Wheels.—
Derby and Cincinnati.....45&5%
Brewster.....50&5%

Files—
Domestic—
Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75% (extra prices on certain sizes)
G. & H. Barnett (Black Diamond).....60&10@60&10&5%
Arcade.....60&10@60&10&10%
Eagle.....60&10@60&10&10%
Other makers, best brands60&10@60&20%
Fair brands.....60&10&10@70&5%
Second quality.....70&10@75&10%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chelsea Horse Rasps, Hand Cut...50&10%
Arcade Horse Rasps.....60&10%
Imported—
Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%

Fixtures.
Grindstone—
Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%
P., S. & W. Co.....50&10%

Fluting Machines—See Machines, Fluting.

Fluting Scissors—See Scissors, Fluting.

Fodder Squeezers—See Squeezers, Fodder.

Forks—
Hay, Manure, &c., Asso List..65&5@65&10%
Hay, Manure, &c., Phila. List. 60@60&5%
Plated, see Spoons.

Frames—
Saw—
White Vermont.....₩ gro $9.00@10.00
Red, Polished and Varnished.....₩ doz $1.50, 25%
Screen, Window and Door—
Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons..33⅓@ 33⅓&10%
Stearns' Frames and Corners..25@25&10%
Cortland.....40@40&5%

Freezers, Ice Cream—
White Mountain.....60@60&5%
Granite State.....65@65&5%
Arctic.....70@70&5%
American.....60%
Buffalo Champion.....55@65&5%
Shepard's Lightning.....65@65&5%
Gem.....60%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star.....60%
Peerless.....60&10%
Giant.....60%
Zero.....60&10&10%
Boss and Pet.....60&10&10&10%
Keystone, P. D. & Co., each $1.50.....30%

Fruit and Jelly Presses—See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Funnels.
Gersdorff's Perfection, Standard and Globe; Tin, 1 gro., 10 %; 2 to 5 gro., 20 %; 5 to 10 gro.....30 %
Copper, 1 to 6 doz., 15 %; 6 to 12 doz., 20 %; over 12 doz.....25 %

Furnaces, Soldering.
Burgess No. 3 Gem, tin reservoir....$7.00
Burgess No. Gem, copper reservoir, 8.50

Fuse—Dis. 12½%. ₩ 1000 ft.
Common Hemp Fuse, for dry ground..$2.75
Common Cotton Fuse, for dry ground 2.25
Single Taped Fuse, for wet ground.. 3.25
Double Taped Fuse, for very wet gr.. 4.25
Triple Taped Fuse, for very wet gr.. 5.00
Small Gutta Percha Fuse, for water.. 7.50
Large Gutta Percha Fuse, for water.12.00

Gates, Molasses—

Stebbin's Pattern.....30@30&5%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....30%
Lincoln's Pattern.....70@70&10%
Weed's.....30&10%
Boss, ₩ doz:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

Gauges.
Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch. 25&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....30&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Horse's.....25%
Wire, Brown & Sharpe's.....10@30%
Wire, P. S. & W. Co.....10&10

Gimlets—
Nail and Spike.....50&10&5%
"Eureka" Gimlets.....40&10%
"Diamond" Gimlets.....₩ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, fves'.....60@60&5%
Double Cut, Douglass'.....40&10%

Glue—
Le Page's Liquid.....25@25&5%
Upton's Liquid.....30%
Improved Process.....25@25&5%
Dodd's Liquid Glue.....25@25&5%

Glue Pots—See Pots, Glue.

Grease, Axle.
Fraser's.....Keg ₩ lb 4¢, Pail ₩ lb 5¢
Fraser's, in boxes.....₩ gr $9.50
Dixon's Everlasting, in bxs..₩ doz 12, $1.30; 2 ₩ $2.00
Dixon's Everlasting....10-lb pails, ea. 85¢
Lower grades, special brands, ₩ gr $5.50@$7.00

Grindstones—
Small, at factory.....₩ ton $7.50@8.00
Family, regular list.....60%
Family, Cleveland Stone Co.....20 %

Grindstone Fixtures—See Fixtures Grindstone.

Hack Saws—See Saws.

Hafts. Awl.
Sewing, Brass Fer. ₩ gr, $3.50.....45&10%
Pat. Sewing, Short, $1.00 ₩ doz.....40&10%
Pat. Sewing, Long.....₩ doz $1.00
Pat. Peg, Plain Top.₩ gr $10.00....45&10%
Pat. Peg, Leather Top.₩ gr $12.00.45&10%

Halters.
Covert's, Rope, Jute.....60&10&10&5%
Covert's, Rope, 7-16-in., Jute.....70&5%
Covert's, Rope, ½-in. Hemp.....50&5%
Covert's Adj. Rope Halters.....40&5%
Covert's Hemp Horse and Cattle Tie. 50&5%
Covert's Jute Horse Ties.....70&5%
Covert's Jute Cattle Ties.....70&10&5%
Covert's Adj. Web Halters.....35&5&5%
E. Covert Mfg. Co.'s Halters.....33⅓%
E. Covert Mfg. Co.'s Horse and Cattle Ties.....33⅓

Hammers—
Handled Hammers—
Maydole's, list Dec. 1, '85.....35&10@35%
Buffalo Hammer Co.
Hunnson & Beckley
Atha Tool Co. } 50@50&10%
Verree.....
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail..40&10%
Regular Y. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Cheney's Claw.....40&10%
Cheney's Machinist's & Riveting.50&5%
Hartford, Nail Hammers.....40&20
Hartford, Machinists, &c...50&5@50&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....30@35
Peck, Stow & Wilcox.....40%
Sargent's.....33⅓&10%
Heavy Hammers and Sledges—
3 lb and under.....₩ lb 40¢
3 to 5 lb.....₩ lb 36¢ } 70@70&10%
Over 5 lb.....₩ lb 30¢
Wilkinson's Smiths.....10½¢@11¢₩ lb

Handcuffs and Leg Irons—See Police Goods,

Handles—
Cross-Cut Saw Handles—
Atkins' No. 1 Loop, ₩ pr., 23¢; No 3, 18¢; No. 6, 15¢; No. 2 and No. 4, Reversible, 18¢.
Champion.....15¢
Iron, Wrought or Cast—
Door or Thumb.

Nos.	0	1	2	3	4
Per doz.	$0.90	1.00	1.10	1.35	1.50

50&10&
Boggin's Latches.....₩ doz 30@33
Bronze Iron Drop Latches..₩ doz 70¢ net
Jap'd Store Door Handles—Nats, $1.65 :
Plate, $1.10 ; no Plate, $0.55 ..... net
Barn Door, ₩ doz $1.40..... 10&10%
Chest and Lifting.....70%
Wood—
Saw and Plane.....40&10@40&10&5
Hammer, Hatchet, Axe, &c... 40@40&5%
Brad Awl.....₩ gr $2.00
Hickory Firmer Chisel, ass'd. ₩ gr 4.50 } 50@
Hickory Firmer Chisel, large. ₩ gr 5.00 } 50@
Apple Firmer Chisel, ass'd....₩ gr 5.00 } 50@
Apple Firmer Chisel, large...₩ gr 6.00 } 50@
Socket Firmer Chisel, ass'd...₩ gr 3.00 } 50@
Socket Framing Chisel, ass'd. ₩ gr 5.00 } 50@
J. B. Smith & Co.'s Pat File..... 50
File, assorted..... ₩ gr 2 75 }
Auger, assorted.....₩ gr 5.00 } 80%
Auger, large.....₩ gr 7.00 }
Pat. Auger, fves'.....₩ set $1.25
Pat. Auger, Douglass.....₩ set $1.35
Pat. Auger, Swan's.....₩ set $1.00
Hoe, Rake, Shovel, &c..... ...50&10%

Hangers—

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10@70
Samson Steel Anti-Friction.....55%
O'Leans Steel.....55%
Hamilton Wrought Wood Track.....55%
...S. Wood Track.....55%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Climax Anti-Friction.....55%
Climax Anti-Friction for Wood Tracks55%
Zenith for Wood Track.....55%
Reed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling.....50@50&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Cheritree.....50&10%
Kidder's.....40&10@60%
Boss.....60&10%
Best Anti-Friction.....60&10%
Duplex (Wood Track).....60&10&5%
Terry's Pat., ₱ dos pr. 4 in, $10.00; 5 in, $12.00.....50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered.....50@5%
Wood Track Iron Clad, ₱ ft. 10¢.....50 &15@60%
Carrier Steel Anti-Friction.....50&10%
Architect, ₱ set $6.00.....20%
Eclipse.....20&10%
Felix, ₱ set $4.50.....20%
Richards'.....30@30&10%
Lane's Standard.....50&5@50&10%
Lane's New Standard.....50@50&5%
Lane's Parlor.....40%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat.....20&10@20&10&10%
Stearns' Anti-Friction.20&10@20&10&10%
Stearns' Challenge.....25&10@25&10&10%
Faultless.....40@40&5%
American, ₱ set $6.00.....20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢.....40%
Paragon, Nos. 1, 2 and 3.....40&10%
Cincinnati.....25&10%
Paragon, Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel Cast Iron.....50%
Nickel, Malleable Iron and Steel.....40%
Scranton Anti-Friction Single Strap33⅓%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00.....45%
Star.....40&10@40&10&5%
May.....50&5@50&10%
Barry, $6.00.....40&10%
Interstate.....50%
Magic.....45%
Pendulum, Payson's.....40%

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co.
Blood's
Hunt's
Hurd's
Mann's
Peck's
Underhill's
Buffalo Hammer Co.
Fayette R. Plumb.
C. Hammond & Son...
Kelly's
Sargent & Co.
P., S. & W. Co.
Ten Eyck Edge Tool Co.
} 40 & 10 @ 50&5 %

Collins.....10%
Schulte, Lohoff & Co.....50@50&5%

Hay and Straw Knives—See Knives.

Hinges—

Blind Hinges—

Parker.....75&2½
Huffer.....50%
Clark's, Nos. 1, 3, 5, 40 and 50 75&10&5@80%
Clark's Mortise Gravity.....50%
Sargent's Nos. 1, 3, 5, 11, 12 75&10@55&10&5%
Sargent's, No. 12.....77&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible...70&10&5@70%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10@25&5
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....₱ dos $4.40, 60%
N. E.....₱ dos $7.00, 55%
N. E. Reversible.....₱ dos $5.20, 55&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State.....₱ dos $5.00, 55&10%
Automatic.....₱ dos $12.50, 50%
Shepard's.....60&10&5%

Spring Hinges—

Geer's Spring and Blank Butts.....40%
Union Spring Hinge Co.'s list, March 1886.....2 %
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's.....30%
Buckman's.....15@20%
Chicago.....30%
Bardsley's Patent.....40%
Acme.....30%
U. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem, and Star.....20%
Oxford.....30%
Wiler.....10%
Devore's.....40%
Hex.....40%
Royal.....60%
Reliable.....60%
Champion.....60%
Stearn's.....50&10%
Samson, ₱ gross.....$14.00
} Extra 5@10 % often given.

Wrought Iron Hinges.

List February 14, 1891.
Strap and T.....50&10%
Corrugated Strap & T.....50@50&10%
Screw Hook and Strap { 6 to 12 in., ₱ D. 4¢ / 14 to 20 in., ₱ D. 3½¢ / 22 to 36 in., ₱ D. 3¢
Screw Hook and Eye { ⅛ in., ₱ D 7½¢ / ¼ in., ₱ D 5½¢ / ⅜ in., ₱ D 4½¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges ("Providence") { 8, 10 & 12 in., ₱ D.....5¢ / over 12 in., ₱ D.....4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat. } 70@70& Am. Axe and Tool Co., S. & O. Pat. } 5%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—

Garden, Mortar, &c.....70%
Planter's, Cotton &c.....70%
Warren Hoe.....60%
Magic.....₱ dos $4.00

Hog Rings and Ringers—See Rings and Ringers.

Hoisting Apparatus—See Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.

Sprengie's Pat.....₱ dos $18.....60%

Bit.

Extension,
Barber's, ₱ dos $15.00.....40@40&10%
Ives, ₱ dos $20.00.....60&5@60&10%
Diagonal.....₱ dos $24.00, 40%
Angular.....₱ dos $24.00, 40&5%

File and Tool—

Bals Pat.....₱ dos $4.00; 25%
Nicholson File Holders.....20%
Dick's Tool Holder.....20%

Hooks—

Cast Iron—

Bird Cage, Sargent's list....
Bird Cage, Reading.....
Clothes Line, Sargent's list..
Clothes Line, Reading list.
} 60&10&10%

60&10@60&10&10%
Ceiling Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading..50&10@50&10&10%

Wrought Iron—

Cotton.....₱ dos $1.25
Cotton Pat. (N.Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)..50%
Wrought Staples, Hooks, &c. See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60@60&10%
Wire Coat and Hat, Miles, list April, 1886.....50&50&10%
Indestructible Coat and Hat...45@45&5%
Wire Coat and Hat, Standard.60@60&10%
Handy Hat and Coat.....50&10@60%
Steady Ceiling Hooks.....50&10@60%
Belt.....30@30&10%
Atlas, Coat and Hat.....60@60&10%
Bright Wire Goods, see *Wire*.

Miscellaneous.

Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass.....₱ dos $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks.....See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition.....75@75&10&5%
Standard.....60&10&10@70&10%
Extra.....60@60&10%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40@40&5%
N. Y. B. & P. Co., Dundee....50&10 @ 60%

Huskers—

Blair's Adjustable.....₱ gr $3.00
Blair's Adjustable Clipper.....₱ gr 7.00
Hubbard's Solid Steel.....₱ gr 4.50

Indurated Fiber-Ware—See Ware, Indurated Fiber.—

Irons.

Sad—

From 4 to 10, at factory....₱ 100 ℔, $2.30@$2.40
Self-Heating.....₱ dos $9.00 net
Self-Heating, Tailors'....₱ dos $18.00 net
Mrs. Pott's Irons.....60@60&10%
Enterprise Star Irons.....60@60&10%
XX Cold Handle Sad Iron.....50&5@50%
Ideal Irons new list.50&10@50 & 10&10%
Salamander, Irons.....35%
B. B. Sad Irons, ₱ ℔.....3 @3½¢
Combined Fluter and Sad Iron, ₱ dos. $15.00.....15%
Fox Reversible, Self-Fluter ₱ dos $24.00
Chinese Laundry (N.E. Butt Co.) 8½¢, 15%
New England.....5¢, 15%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓%
National Self-Heating.....50%

Soldering—

Soldering Coppers.....₱ ℔ 19 @ 21¢
Covert's Adjustable, list Jan. 1 1886. 35&2%

Irons, Pinking, per dos., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy.....33⅓%
Victor.....33⅓%
Lockport.....40¢

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld.W.M.list Jan. 1, '91.20%
Enameled and Tea—See Hollow Ware.

Keys—

Lock Asso'n list Dec. 20, 1886...50&10@60&5%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss, Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Ratchet Bed Keys.....₱ dos $4.00, 15%
Wollensak Tinned.....50&10%

Knife Sharpeners—See Sharpeners, Knife.

Knives.

Butcher, Shoe, &c—

Wilson's Butcher Knives, List Dec. 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's AAA1, Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives.....20@25%
Ames' Bread Knives, ₱ dos $1.50, 15@20%
Moran's Shoe and Bread.....20%
Hay and Straw.....See Hay Knives.
Table and Pocket.....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn, Auburn Mfg. Co. Crescent....$3.50

Corn—

Bradley's.....10%
Wadsworth's.....25%

Drawing—

Witherby
P. S. & W.
Mix
New Haven
} ..75 @ 75&10 %

Merrill.....60&10@60&10&5%
Douglas.....75@75&5%
Walrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Hay and Straw—

Lightning, from jobbers....$8.00 @ $9.00
Wadsworth's.....40&7½@40&10%
Carter's Needle.....₱ dos $11.00@$11.50
Heath's.....₱ dos $13.00@13.50
Auburn Hay, Com. and Spear Point..50%
Auburn, Straw.....40%
Nolin's Hay.....₱ dos $7.00 @ $8.00

Mincing.

Am. (3d quality), ₱ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Lothrop's.....50&10%
Smith's, ₱ dos, Single, $2.00: Double, $3 40@45%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable.....₱ dos $3.00 .25%
Buffalo Double Adj'table.₱ dos $3.00 25%

Knobs—

Door Mineral.....60@65%
Door Por. Jap'd.....70@75%
Door Por. Nickel.....$2.00@2.25
Door Por. Plated, Nickel.....$2.00@2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...30%
Furniture Plain.....75¢ gro inch, 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....₱ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c..40%

Ladies.—

Melting, Sargent's.....55&10%
Melting, Reading.....35&10%
Melting, Monroe's Pat...₱ dos $4.00, 40%
Melting, P. S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Plain with Guards, ₱ dos.....$3.75@4.00
Lift Wire, with Guards.....$4.00@4.25
Square Plain, with Guards....$3.75@4.00
Sq. Lift Wire, with Guards.....$4.50

Police Lanterns (including packages).

2¼-inch Bull's-eye Police regular. ₱ dos $3.60
3-inch Bull's-eye Police regular. ₱ dos $3.90
2¼-inch Bull's-eye Police flash light. ₱ dos $4.00
3-inch Bull's-eye Police flash light. ₱ dos $4.50

Lawn Mowers—See Mowers, Lawn.

Leaders, Cattle.

Humason, Beckley & Co.'s.....70%
Sargent's.....60%&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—See Squeezers, Lemon.

Lifters, Transom.

Wollensak's:
Class 3 and 4, Bronsed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass.....35%
Skylight Lifters.....35%
Crown, Eagle and Shield.....50%
Reiher's, list Feb. 20, 1891.
Bronsed Iron Rods.....50&10&10&2%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2 %
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60&10%
Imperial.....50&10%

Lines—

Cotton and Linen Fish, Draper's.....50%
Draper's and Tate's Chalk.....60%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....20%
Cotton Chalk.....50%
Samson Cotton, No. 4, $2; No. 4½, $2.50; No. 5, $3.....10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gro.....30%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton.....40%
Wire Clothes.. Nos. 1P 2P 3P
100 ft. $3.50 $3.00 $2.50
Ventilator Cord, Samson Braided, White or Drab Cotton..₱ dos $7.50, 20%

Links, Open.

Terry's—per gro.:
Nos..... 1 2 3 4
$6.00 8.00 12.00 16.00

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List March, '84, rev Jan. 1, '85..33⅓&2%
Deits, Nos. 36 to 39.....40%
Deits, Nos. 51 to 63.....40&10%
Deits, Nos. 86 to 96.....30%
Stoddard Lock Co.....30&33⅓%
"Champion" Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....35&2%
"Champion" Cab. and Combin...33⅓%
Yale.....net prices
Romer's.....35%

Door Locks, Latches, &c.

R. & E. Mfg. Co., list Mar. 30, 1889.....
Mallory, Wheeler & Co., list July, '88.....
Sargent & Co., list Aug. 1, '88.....
Reading Hardware Co., list Feb. 2, '88.....
Branford Lock Works.....
} 65&10@70% Much lower net prices often made.

Brittan, Granam & Mathes, list Jan. 1890.....60&10&10%
Perkins' Burglar Proof.....60&30%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Deits Flat Key.....30%
L. & C. Round Key Latches.....30&10%
L. & C. Flat Key Latches.....33⅓&10%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Shepardson or U. S.....30%
Seed's N. Y. Hasp Lock.....30%

Padlocks—

List June 10, 1891.....50&2%
Norwich Lock Mfg. Co., old list....70&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....35&2%
Eureka, Eagle Lock Co.....40&2%
Romer's, Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505.....15%
A. E. Deits.....40%
Champon Padlocks.....40%
Hotchkiss.....30%
Star.....60%
Horseshoe.....₱ dos, $9, 40@40&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Brown's Pat.....35%
Scandinavian.....90@90&10%
E. T. Fraim's Keystone Scandavian. Nos. 119, 130, 130 and 140.....90&10%
Other Nos.....85%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker Barry & Co.
No. 1010 line.....35&5%
No. 41 line.....45&10%
No. 61 line.....50&5%
No. 21 line.....75%

Sash, &c.

Clark's, No. 1, $10; No. 2, $8 ₱ gr..33⅓&2%
Ferguson's.....30%
Victor.....60&10&5%
Walker's.....10%
Attwell Mfg. Co.....35&10%
Reading.....65%&10@65%&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'sed.....₱ gr $4.00
Common Sense, Nickel Plated ₱ gr $10.00
Universal.....30%
Kempshall's Gravity.....30%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Stoddard "Practical".....10%
Ives' Patent.....60&10@60&10&2%
Fish (Lieache's pat.), No. 100, ₱ gr., $8; No 105, ₱ gr, $10.....40%
Davis, Bronse, Barnes Mfg. Co.....50%
Champion Safety, list January, 1890..70%
Security.....70%
Giant, list Jan., 1892.....70&5%

Lumber Tools—See Tools, Lumber

Lustre—

Four-ounce Bottles....₱ dos, $1.75; ₱ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.
Douglas		$5.50	$6.75 ..... 30%
Snell's, Lace's Pat.		5.50	6.75 .40&10&10%
Jennings		5.50	6.75 .45@45&10%
Other Machines		2.25	2.75 .....
Phillips' Patent with Augers		7.00	7.50 .....
Miller's Falls		7.50	..... 25%

Fluting.

Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3¼-inch Roll, $2.15.....35%
Eagle, 5¼-inch Roll, $2.85.....30%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel 6 in.....$3.50 each, 25%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal ₱ dos $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; $12.50; 3, $10.00.....30%
Shepard Hand Fluter, No. 85 ₱ dos $9.50.....40%
Shepard Hand Fluter, No. 110 ₱ dos $11.00.....40%
Shepard Hand Fluter, No. 98 ₱ dos $8.00.....40%
Clark's Hand Fluter.₱ dos $15.00.....35%
Combined Fluter and Sad Iron. ₱ dos $15.00.....30%
Buffalo ₱ dos $10.00.....10%

Hoisting—

Moore's Hand Hoist, with Lock Brake.....30%
Moore's Differential Pulley Block...40%
Energy Mfg. Co's.....25%
Sure Grip Steel Tackle Blocks.....35%

Washing—

Anthony Wayne, ₱ dos No. 1, $51 No. 2, $45; No. 3, $42.
Western Star ₱ dos No. 2, $45; No. 3, $48
Weisel.....₱ dos $54.00
Fair and Square.....₱ dos $42.00

Mallets.
Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
S. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks. Regular list. 60&10@60&10&5%

Measures—
Standard Fiberware, No. 1, peck, ₩ dozen, $4; ½-peck, $3.50.

Meat Cutters—See Cutters, Meat.

Menders, Harness—
Per doz.....$2.00

Mills.
Coffee—
Box and Side, List Jan. 1, 1888. 60@60&10%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg Co. 20&10@30%
The Swift, Lane Bros.....20&10%

Mincing Knives—See Knives, Mincing.

Molasses Gates—See Gates, Molasses.

Money Drawers—See Drawers, Money.

Mowers, Lawn.
Philadelphia.....60&10%
Pennsylvania and Continental.....10%
New Model and Excel lor.. 60@60&10%
Other Machines.....60&10&10@75%

Muzzles—
Safety.....₩ doz, $3.00, 25%

Nails,
Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, Apr. 11, '92 80&10&10%
Tack Mfrs.' list.....70@70&10%
Wire Nails, Standard Penny.
Card June 1 '89 base.....$1.95 @ $2.00

Horse—

Nos.	6	7	8	9	10	
American	8%	8%	8%	8%	8%	net
Aussable	28	26	25	24	23	40&5&5&2%
Clinton, Fin.	19	17	16	15	14	.30&10%
Essex	28	26	25	24	23	40&10&5&2%
Lyra	19	17	16	15	14	.40&5%
Snowden	19	17	16	15	14	.40&5%
Putnam	23	21	20	19	18	1000 ₺ in year 15%
Vulcan	23	21	20	19	18	.....25%
Northwest'n.	25	23	22	21	20	25@25&5%
A. C.	25	23	22	21	21	25&10@33⅓&5%
C. B.-K.	25	23	22	21	21	25&10@33⅓&5%
Wand S.	25	23	22	21	21	40&10&5%
Champlain	28	26	25	24	23	40&5&5&2%
Saranac	23	21	20	19	18	.40&5%
Champion	25	23	22	21	20	10&10&10%
Capewell	19	18	17	16	16	.10%
Anchor	23	21	20	19	18	.30%
Western	23	21	20	19	18	.50%
Empire Bronzed						.14 ₩ ₺.

Picture—
Brass Head, Sargent's list.....50&10&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list. 40&10%
Miles' Patent.....40%

Nail Pullers.—See Pullers, Nail.

Nail Sets.—See Sets, Nail.

Nut Crackers.—See Crackers, Nut.

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed	5.35¢	5.95¢ off list.
Cold Punched	5.00¢	5.10¢ off list.

In packages of 100 ₺, add 1-10¢ ₩ ₺, net; in packages less than 100 ₺, add ½¢ ₩ ₺, net.

Oakum—
Best or Government.....₩ ₺ 7@7½¢
U. S. Navy.....₩ ₺ 6@6½¢
Navy.....₩ ₺ 5½@6¢

Oilers—
Zinc and Tin.....65&10@70&5%
Brass and Copper.....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₩ doz. 10@10&5%
Malleable, Hammers, Old Pattern, same list.....40%
Prior's Pat. or "Paragon" Zinc, 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....60%
Broughton's Brass.....50%
Gem P. D. & Co.....₩ gro. $2
Steel, Draper and Williams.....50%

Openers, Can.
Messenger's Comet.....₩ doz $3.00, 25%
American.....₩ gross $2.75@$3.00
Duplex.....doz 25¢, 15@20%
Lyman's.....₩ doz $2.75, 20%
No. 4 French.....₩ doz $2.25, 55@60%
No. 5, Iron Handle.....₩ gr $6.00, 45&50%
Eureka.....₩ doz $2.50, 10%
Sardine Scissors.....₩ doz $2.75@3.00
Star.....₩ doz $2.75
Sprague, No. 1, $3.00; 2, $2.25; 3, $2.50. 50&10&10%
Excelsior No. 1 $2.50; No. 2, $1.50.....40%
World's Best, ₩ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₩ doz $3.00.....55&5%
Domestic, ₩ doz $2.50.....45%
Champion ₩ doz $2.00.....5C%

Packing, Steam—
Rubber—
Standard.....70@70&10%
Extra.....60@60&5%
N. Y. B. & P. Co., Standard.....50%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
Jenkins' Standard. ₩ ₺ 80¢...25@25&5%

Miscellaneous—
American Packing.....10@11¢ ₩ ₺
Russia Packing.....14¢ ₩ ₺
Italian Packing.....13@14¢ ₩ ₺
Cotton Packing.....15@17¢ ₩ ₺
Jute.....7@8¢ ₩ ₺

Pails.
Galvanized Iron—

	Quarts	10	12	14
Hill's Light Weight, ₩ dz.		$2.75	3.00	3.25
Hill's Heavy Weight, ₩ dz.		3.00	3.25	3.75
Helwig's.		2.50	2.75	3.00
Sidney Shepard & Co.		2.25	2.85	3.05
Iron Clad		2.50	2.75	3.00
Fire Buckets		2.75	3.25	3.50

Buckets, see Well Buckets.
Indurated Fibre Ware—25%
Star Pails, 12 qt.....₩ doz $5.40
Stable and Milk, 14 qt.....₩ doz $6.00
Fire Pails, deep.....₩ doz $5.40
" " round bottom.....₩ doz $7.80
Standard Fibre Ware—

	Plain.	Deer'd
Water Pails, 12 qt., per doz.	$4.00	$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No. 1, 12 qt. per doz	4.50	
Fire Pails, No. 2, 14 qt. per doz	5.00	
Sugar Pails	6.00	6.50
Horse Pails	5.00	
Buggy Pails	4.00	
Slop Jars (bal. trap)	8.00	9.00
Chamber Pails, 14-qt.	6.50	7.50

Pans.
Dripping.
Smalls izes.....₩ ₺ 6½¢
Large sizes.....₩ ₺ 6½¢
Silver & Co. (Covered).....40%
Fry—
Standard List:

No.	0	1	2	3	4
₩ doz.	$3.00	$3.75	$4.25	$4.75	$5.25
No.	5	6	7	8	
₩ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans.....60&10%
Dust—
Steel Edge, No. 1.....₩ doz $1.75

Paper and Cloth—
Sand and Emery—
List April 19, 1886.....50@50&10%
Sibley's Emery and Crocus Cloth.....30%

Parers.
Apple.
Advance.....₩ doz $4.75
Baldwin.....₩ doz 5.25
Bonanza.....each 5.00
Daisy.....₩ doz 4.00
Dandy.....each 7.50
Eclipse.....₩ doz 4.25
Eureka, 1888.....each 16.00
Family Bay State.....₩ doz 12.00
Favorite.....₩ doz 5.00
Gold Medal.....₩ doz 4.00
Ideal.....₩ doz 4.00
Improved Bay State..₩ doz 27.00 @ 30.00
Little Star.....₩ doz 4.50
Monarch.....₩ doz 13.50
New Lightning.....₩ doz 5.50
Oriole.....₩ doz 4.00
Pean.....₩ doz 4.00
Perfection.....₩ doz 4.00
Pomona.....₩ doz 4.00
Rocking Table.....₩ doz 6.00
Turn Table.....₩ doz 4.50
Victor.....₩ doz 13.50
Waverly.....₩ doz 4.00
White Mountain.....₩ doz 4.00
78.....₩ doz 4.25
78.....₩ doz. 7.00
Potato—
White Mountain.....₩ doz $4.50
Antrim Combination.....₩ doz $5.50
Hoosier.....₩ doz $13.50
Saratoga.....₩ doz $5.50

Pencils—
Faber's Carpenters'.....high list 50%
Faber's Round Gilt.....₩ gro $5.25
Dixon's Lead.....₩ gro $4.50
Dixon's Lumber.....₩ gro $6.75
Dixon's Carpenters'.....10%

Picks—
Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10@60&10&5%

Picture Nails.—See Nails, Picture.

Pinking Irons.—See Irons, Pinking.

Pins.
Box—
Humason, Beckley & Co.'s.....60&10%
Sargent & Co's....$17 and $18.....60&10%
Peck, Stow & W Co....50&10&50&10&5%
Curtain—
Silvered Glass.....net
White Enamel.....net
Escutcheon.
Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—
List September 18, 1889.
1¼ and under, Plain.....60@60&5%
1¼ and under, Galvanized.....50@50&5%
1¼ and over, Plain.....70@70&5%
1¼ and over, Galvanized.....60@60&5%
Boiler Tubes,
Sizes up to 2¼ in. inclusive...37½@60%
Sizes 3 in. and larger.....60@50%
Casing.....55%
Inserted Joints Casing.....50%
Steel Boiler Tubes.....30%

Planes and Plane Irons—
Wood Planes—
Molding.....40&10%
Bench, First Quality.....50&10%
Bench, Second Quality.....55&10%
Bailey's (Stanley R. & L. Co.)'s.....50&10%
Iron Planes—
Bailey's (Stanley R. & L. Co.).....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10%
Steer's Iron Planes.....35@35&10%
Merrion Mal. Iron Co.'s.....40@40&10%
Davis's Iron Planes.....40@40&10%
Birmingham Plane Co.....50@50&10%
Gage Tool Co.'s Self-Setting...20&10&10%
Chaplin's Iron Planes.....40@40&10%
Sargent's.....20&10@20&10&10%
Standard Tool Co.....50@50&5%
Plane Irons—
Butcher's.....$5.00@$5.25 to £
Buck Bros.....30%
Auburn "Thistle."
Ohio.
Sandusky.....30&10%
S. & I. J. White.....35%
Stanley R. & L. Co.....50&10%

Plates.
Felloe.....₩ ₺ 6¢@6½¢

Pliers and Nippers.
Button's Patent.....50@50&10%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in. $21.00 ₩ doz.....40%
Humason & Beckley Mfg. Co...50@50&10%
Lindsay's Giant.....40%
Gas Pliers.....50%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....25%
P. S. & W. Cast Steel.....50%
P. S. & W. Tinners' Cutting Nippers, add 3¢ dis 10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₩ doz, $12.00....30&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 5%&50&5%
Cronk's Button Pattern.....50 &10 &60%
Cronk's Carrier Pli rs.....50@60&5%

Plumbs and Levels—
Regular List.....75&10@75&10&5%
Stanley's Duplex.....20&10%
Stanley's Handy.....20&10%
Disston's.....50%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis' Inclinometers.....10&10%

Poachers.
Egg.
Buffalo Steam Egg Poachers, ₩ doz, No. 1, $6.00; No. 2, $9.00.....25%
Silver & Co., 6-Ring..₩ doz $4; 3-Ring $2

Poker, Animal—
Bishop's I. X. L.....₩ doz $6.00
Bishop's C. K.....₩ doz $5.25
Bishop's Pioneer.....₩ doz $3.75
Bishop's American.....₩ doz $2.75
Eagle, Double Stale.....₩ doz $5.75
Eagle, Single Stale.....₩ doz $3.75
Buckeye, Single Stale.....₩ doz $2.75
Bo ding.....₩ doz $4.00

Police Goods.
R. I. Tool Co., Handcuffs, $15.00 ₩ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₩ doz 10%
Tower's.....25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₩ doz $45.00; Nickeled, $57.00: 3 Hands, Polished, ₩ doz $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish, Metal.
Prestoline.....30%
Prestoline Paste.....33⅓%
Gaston's Silver Compound.....33⅓%

Polish, Stove.
Joseph Dixon's.....₩ gro $6.00, 10%
Gem.....₩ gro $4.50, 10%
Gold Medal.....₩ gro $6.00, 25%
Pride.....₩ pro $6.00, —%
Lustro.....₩ gro $4.75
Ruby.....₩ gro $3.75
Rising Sun, 5 gro lots.....₩ gro $5.50
Dixon's Plumbago.....₩ ₺ 8¢
Boynton's Noon Day, ₩ gro.....13.00
Parlor Pride Stove Enamel..₩ gro
Yates' Liquid, 2 3 5 10 gal....
₩ gal ...$0.80 .70 .60 .50
Yates Standard Paste Polish, 10-₺ cans, ₩ ₺ 12½¢
Jet Black.....₩ gro $3.50
Japanese.....₩ gro $3.50
Pride.....₩ gro $3.50
Fireside.....₩ gro $2.50
Diamond O. K. Enamel.....₩ gro $19.00
Bonnell's Liquid Stove Polish..₩ gro $9.00
Bonnell's Paste Stove Polish..₩ gro $6.00
Black Eagle Bensine Paste, 5 and 10 ₺ cans.....13½¢
Black Jack Water Paste, 5 and 10 ₺ cans.....12½¢
Nickel Plate Paste.....₩ gro $6.00
Crown Paste.....₩ gross, $7.20
Crown Paste, in 5 and 10 ₺ pails ₩ ₺ 12¢
Black Flag.....₩ gross, $7.20
Black Flag, 5 and 10 ₺ pails.....₩ ₺, 12¢
Black Flag, liquid, in bottles, ₩ gro..$8.00
Diamond Rock Nickel Cleaner..₩ gro $10.20

Peppers, Corn—
Round or Square, 1 qt..₩ gr $10.00@10.50
Round or Square, 1½ qt..₩ gr $15@15.50
Round or Square, 2 qt..₩ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.

Potato Parers—See Parers, Potato.

Pots.
Glue—
Tinned.....40&10@40&10&5%
Enameled.....40&10@40&10&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Presses.
Fruit and Jelly—
Enterprise Mfg. Co.....20&10@30%
Henis.....₩ doz $2.50
Shepard's "Queen City".....40%
Silver & Co.....₩ doz $2.75

Pruning Hooks and Shears.—See Shears.

Pullers.
Nail.
Scranton.....₩ doz $18.00, 33⅓%
Curtiss Hammer.....₩ doz $9.00
Giant, No. 1.....₩ doz. $13.00, 10%
Giant, No. 2.....₩ doz, $15.00, 10%
Pelican.....₩ doz, $9.00, 25%
Eclipse.....each, $3.00 net
Economy.....₩ doz $6.00

Pulleys—
Hot House, Awning, &c.....60&10%
Japanned Screw.....60&10%
Brass Screw.....60&10%
Japanned Side.....60⅔&10%
Japanned Clothes Line.....60&10%
Empire Sash Pulley.....55@60%
Moore's Sash, Anti-Friction.....50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70.....50%
Hay Fork, "" Common and Pat. Bushed.....20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating...60%
Shade Rack.....45%
Tackle Blocks.....See Blocks
Moore's Anti-Friction 5 in. Wheel, ₩ doz $13.00.....40%

Pumps—
Cistern, Best Makers.....60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper G'ds..75@75&10%

Punches—
Saddlers' or Drive, good, ₩ doz...60@65%
Bemis & Call Co.'s Cast Steel Drive..50&5%
Bemis & Call Co's Springfield Socket.50&5%
Spring, good quality....₩ doz $2.50@2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring and Check..40%
Solid Tinners', P. S. & W. Co., ₩ doz $1.44, 55%
Tin'rs' Hollow Punches P. S. & W. Co. 30&5%
Rice Hand Punches.....15%
Avery's Revolving.....40%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—
Sliding Door, Wr't Brass, ₩ ₺ 35¢.....15%
Sliding Door, Bronzed Wr't Iron..₩ ft. 7¢
Sliding Door, Iron, Painted, ₩ foot 4¢, 40%
Barn Door, Light, In. ½ ¾ 1
Per 100 feet.... ....$2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—

	Small.	Med.	Large.
Per 100 set	$2.15	3.70	net

Terry's Steel Rail, ₩ foot.....4½¢
Victor Track Rail, 7s ₩ foot.....50&5%
Carrier, double braced, Steel Rail, ₩ foot.....4¼@4½¢
Moore's Wrought Iron.....30%

Rakes.
Cast Steel, Association goods...60%@70%
Cast Steel, outside goods 50&10&10@70&5%
Malleable.....70@70&5%
Gibbs Lawn Rake.....₩ doz $1.90
Canton Lawn Rake.....₩ doz $3.75
Favorite Lawn Rake.....₩ doz $1.40
Ft. Madison Prize Bow Brace and Peerless.....60%
Fort Madison Steel Tooth Lawn Rake, $6.00.....25%

Razors—
J. R. Torrey Razor Co.....20%
Wostenholme and Butcher, $10 to £..10%
Jordan's AAAI, new list.....net
Jordan's Old Faithful, new list.....net
Galvanic.....₩ doz $15.00
Electric Cutlery Co's.....Not

Razor Strops—See Strops, Razor.

Rings and Ringers.
Bull Rings—
Union Nut Co.....55%
Sargent's.....60%&10@70&5%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co's..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%
Hog—
Top of the Hill Ringers.....₩ doz $2.00
Top of the Hill Rings.....₩ doz $1.25
Hill's Improved Ringers.....₩ doz $1.25
Hill's Old Style Ringers.....₩ doz $1.13½
Hill's Tongs.....₩ doz $2.00
Hill's Rings.....₩ doz bxs $1.00
Perfect Rings.....₩ doz bxs $1.50
Perfect Ringers.....₩ doz $2.15@$2.25
Blair's Hog Ringers.....₩ doz $2.00
Blair's Hog Rings.....₩ doz 90¢@$1.00
Champion Ringers.....₩ doz $2.00
Champion Rings, Double.....₩ doz $2.25
Brown's Ringers.....₩ doz $2.00
Brown's Rings.....₩ doz $1.15@1.25
Electric Hog Rings...₩ doz boxes $1.50
Electric Hog Ringers.....₩ doz $2.00
Major Rings.....₩ oz $1.25
Major Ringers.....₩ doz $2.00

Rivets and Burrs—
Iron, list Nov. 17, '87.....40%
Copper.....60&10%
Coppered Iron, Bettina Brand.....40%

Rivet Sets—See Sets.

Rods—
Stair, Brass.....25&2%
Stair, Black Walnut.....₩ doz 40¢

Rollers—
Barn Door, Sargent's list.....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller.....70%

Rope.
Manilla, 7-16 in. diam. and larger ₩ ₺ 12½¢
Manilla.....½ in. ₩ ₺ 13½¢
Manilla.....⅜ and 5-16 in. ₩ ₺ 13½¢
Manilla Tarred Rope.....₩ ₺ 11½¢
Manila, Hay Rope.....₩ ₺ 12½¢
Sisal.....7-16 inch and larger ₩ ₺ 10½¢
Sisal.....½ in. ₩ ₺ 10½¢
Sisal.....¼ and 5-16 in. ₩ ₺ 11½¢
Sisal, Hay Rope.....₩ ₺ 10½¢
Sisal, Tarred Rope.....₩ ₺ 9½¢
Sisal, Medium Lath Yarn.....₩ ₺ 9½¢
New Zealand..7-16 in. & larger ₩ ₺ 8½¢
New Zealand.....½ inch, ₩ ₺ 9½¢
New Zealand, ⅜ and 5-16 inch, ₩ ₺ 9½¢
New Zealand, Hay Rope.....₩ ₺ 8½¢
New Zealand. Tarred Rope..₩ ₺ 8½¢
Note.—Manufacturers' prices on above 1¢ ₩ ₺ less, f.o.b. factory—less 1½% for cash.
Cotton Rope.....₩ ₺ 13½@16¢
Jute Rope.....₩ ₺ 6½@7¢
Wire—
List February, 1892.
A 1 kinds.....45%

Rules—
Boxwood.....30&10&10%
Ivory.....50&50&10%
Starrett's Rules and Straight Edges, Steel.....35&10%

Sad Irons—See Irons, Sad.

Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery

Sash Cord—See Cord, Sash.

Sash Locks—See Locks, Sash.

Sash Weights—See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.

Saws—The following prices are often cut by jobbers.
Disston's Circular.....45@45&5%
Disston's Cross Cuts.....45@45&5%
Disston's Hand.....30@20&5%
Woodrough & McParlin.
Hand, Panel and Rip.....35@35&5%
Narrow Champion Cross Cuts with Handles, ₩ foot.....18@20%
Champion Thin Back Cross Cuts, ₩ foot.....20@22%
Champion Extra Thin Back Cross Cuts, ₩ foot.....29@31%
One Man Champion Cross Cuts, ₩ foot.....37@40
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip.....30@30&5%
Narrow Champion Cross Cuts with Handles, ₩ foot.....18@20%
Champion Thin Back Cross Cuts, ₩ foot.....20@22%
Champion Extra Thin Back Cross Cuts, ₩ foot.....29@31%
One Man Champion Cross Cuts, ₩ ft.. 37@40
Atkins' Circular Shingle & Heading..50%
Atkins' Silver Steel Diamond X Cuts ₩ foot 70¢
Atkins' Special Steel Dexter X Cuts ₩ foot 50¢
Atkins' Special Steel Diamond X Cuts ₩ foot 32¢
Atkins' Champion and Electric Tooth X Cuts.....₩ foot 30¢
Atkins' Hollow Back X Cuts..₩ foot 30¢
Atkins' Mulay, Mill and Drag.....40%
Atkins' One-Man Saw, with handles, ₩ foot 40¢
Peace Circular and Mill.....45@45&5%
Peace Hand Panel and Rip....35@35&5%
Peace Cross Cuts.....45@45&5%
Richardson's Circular and Mill..45@45&5%
Richardson's & Cuts.....45@45&5%
Richardson's Hand, &c.....25@25&5%
C. E. Jennings & Co., Hand, Panel and Rip.....35@35&10%

Hack Saws—

Griffin's, complete.....40&10@50%
Griffin's Hack Saw, Blades.....40&10@50%
Star Hack Saws and Blades.....35%
Eureka and Crescent.....25%

Scroll—

Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cab. Makers' $15.25%
Barnes' Scroll Saw Blades.....35%

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Scales—

Hatch, Counter, No. 171, good quality, ₩ doz $21.00
Hatch, Tea, No. 161....₩ doz $6.75@$7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.40@2.50
Chatillon's Grocers' Trip Scales.....50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....50@50&10%
Richie Bros.' Platform.....40%

Scale Beams—See Beams, Scale.

Scissors, Fluting.....45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $5.50.....30&10%
Box, 1 Handle.....₩ doz $4.00, 10%
Box, 2 Handle.....₩ doz $6.00, 10%
Defiance Box and Ship.....20&10%
Foot.....50&10@60%
Ship, Common.....₩ doz $3.50 net
Ship, R. I. Tool Co.....10%

Screen Window and Door Frames—See Frames.

Screw Drivers—See Drivers, Screw.

Screws.

Bench and Hand—

Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.....₩ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood.....25&10@25&10&5%
Hand, Grand Rapids, list.....75%
Lag, Blunt Point, list Jan. 1, 1890.75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890.....75@75&10%
Bed.....25&5%
Hand Rail, Sargent's.....60&&10%
Hand Rail, H. & F. Mfg. Co...70&10@75%
Hand Rail, Am. Screw Co.....75%
Jack Screws, Millers Falls list..50@50&5%
Jack Screws, P. S. & W.....35%
Jack Screws, Sargent...60&10@60&10&5%
Jack Screws, Stearns'.....40@40&10%

Cork—

Humason & Beckley Mfg. Co..40&10@50%
Williamson's.....33⅓@33⅓&5%
Howe Bros & Hulbert.....35%

Machine—

Flat Head, Iron.....55%
Round Head, Iron.....60%

Wood—

List January 1, 1891.

Flat Head Iron	70	Extra 10 10&5 % of. ten given.
Round Head Iron	65	
Flat Head Brass	70	
Round Head Brass	65	
Flat Head Bronze	70	
Round Head Bronze	65	
Rogers' Drive Screws	82½	

Scroll Saws—See Saws, Scroll.

Scythes.

Grain.....40&5@40&10%
Grass.....40&10@50%

Scythe Snaths—See Snaths, Scythe

Sets.

Awl and Tool.

Aiken's Sets, Awls and Tools, No. 20, ₩ doz $10.00.....55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9.....25@25&10%
Miller's Falls Adj. Tool Hdls., Nos. 1, $12. 2, $18.....25%
Henry's Combination Haft...₩ doz $6.50
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $3.50.....30&10%
Common Brad Sets, No. 42, $10.50; No. 43, $12.50..70&10&5%

Nail—

Square.....₩ gr., $4 00@$4.25
Round.....₩ gr. $2.25
Buck Bros.....27½%
Cannon's Diamond Point...₩ gr., $12, 20%

Rivet,

Regular list.....50&10%

Saw—

Stillman's Genuine...₩ doz $5.00@7.75, 40&5%
Stillman's Pattern, Hand, ₩ doz $3.25; Cross Cut, 5.25.....45@50%
Common Lever....₩ doz $2.00, 45@50%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00, 40&10@50%
Leach's. No. 0, $8.00; No. 1, $15, 15@20%
Nash's.....20&10@20&10&10
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer.....30&5%
Bemis & Call Co.'s Plate.....10%
Bemis & Call Co.'s Cross Cut.....12½%
Aiken's Genuine.....$13.00, 50&10@60%
Aiken's Imitation.....$7.00, 55&5%
Hart's Pat. Lever.....20%
Disston's Star.....25%
Leopold.....40&10&50%
Atkin's Lever.....₩ doz No. 1, $6.00
Atkin's Criterion.....₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00.....40&10%
Avery's Saw Set and Punch.....50%
Chieftain Co.'s Superior.....₩ doz $7.00
Chieftain Co.'s Royal.....₩ doz $7.50
Crescent.....₩ doz $3.00
Lloyd's Acme.....₩ doz $15.00, 40&10%

Sharpeners, Knife.

arkins.

Applewood Handles....₩ doz $6.00, 40%
Rosewood or Cocobo a..₩ doz $900 40%

Shaves, Spoke

Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.).....40&10%
Stearns'.....30&10%
Cincinnati.....25&10%
Goodell's, ₩ doz $9.00.....25%

Shears—

American (Cast) Iron...75&10@75&10&5%
Barnard's Lamp Trimmers...₩ doz $3.75
Tinners'.....30&2%
Seymour's, List, Dec., 1881, 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881, 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears.....33⅓%
Cast Steel Trimmers:
First quality.....80@80&10%
Second quality.....80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper.....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Chicago Drop Forge & F. Co., Solid Steel Forged.....60%
Davenport Cutlery Co.....60@60&10%
Clauss Shear Co., Japanned.....70%
Clauss Shear Co., Nickeled, same list.60%
Galvanic, 3½ to 9 in, ₩ doz, $1.00 ₩ inch
Electric Cultery Co.....Net

Pruning Shears and Hooks.

Diston's Combined Pruning Hook and Saw.....₩ doz $18.00, 20&10%
Diston's Pruning Hook, ₩ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools.....40%
Pruning Shears, Henry's Pat, ₩ doz $3.75@4.00
Henry's Pruning Shears, ₩ doz $4.25@4.50
Wheeler, M. & C. Co.'s Combination, ₩ doz $12.00, 20%
Dunlap's Saw and Chisel, ₩ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2 7.25
P., S. & W. Co.....60%

Tinners', &c.—

Shears and Snips (P. S. & W.).....20@25%
Snips, J. Mallinson & Co.....33⅓%

Sheaves—

Sliding Door—

M. W. Co., list July, 1888..50&10@60&5%
R. & E., list Dec. 18, 1885.....55&20%
Corbin's list.....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's.....75%
Russell's Anti-Friction, list Dec. 18, 1885.....60&2%
Moore's Anti-Friction.....50%

Sliding Shutter—

R. & E. list Dec. 18, 1885.....60&10&2%
Sargent's list.....60&10%
Reading list.....60&10&10%

Shells—

First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Prise.....40&2%
Star, Club, Rival and Climax brands, 33⅓&10&2%
Selbold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax.. 65&2%

Shells Loaded—

Standard List, July 19, 1890.....40&10&10@40&10&10&5%

Ship Tools—

L. & I. J. White.....20&5%

Shoes, Horse, Mule, &c.—

Horse—

Burden's, Perkins', Phoenix and Bryden's Boss, at factory.....$4.00
Bryden's Frog Pressure, at factory.$5.00

Mule—

Add $1 ₩ keg to above prices.

Ox, Wrought—

Ton lots.....₩ ℔ 9¢
1000 ℔ lots.....₩ ℔ 9½¢
500 ℔ lots.....₩ ℔ 10¢

Shot—

	Ton lots	Small lots
Drop, up to B, 25-℔ bag	$1.25	$1.30
Drop, up to B, 5-℔ bag	.35	.35
Drop, B and larger, 25-℔ bag	1.50	1.55
Drop, B and larger 5-℔ bag	.40	.40
Buck and Chilled, 25-℔ bag	1.50	1.55
Buck and Chilled, 5-℔ bag	.40	.40
Dust Shot, 25-℔ bag	1.95	2.00
Dust Shot, 5-℔ bag	.45	.45

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20%
NOTE.—Jobbers frequently give 5&7½% extra on above.
Griffith's Black Iron.....50&10%
Griffith's C. S.....60@60&10%
Griffith's Solid C. S. R. R. Goods.....20%
St. Louis Shovel Co.....20@20&7½%
Hussey, Binns & Co.....15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co.....50&10%
H. M. Myers Co.....30%
Payne Pettebone & Son.....35%&25%
Remington's (Lowman's Pat.)20&10@40%
Rowland's, Black Iron.....50&10%
Rowland's Steel.....60&5@60&10%

Shovels and Tongs—

Iron Head.....60&10@60&10&5%
Brass Head.....60&10&10%

Sieves—

Mann's Tin Rim.....50&25%
Buffalo Metallic, S. S. & Co.....50&25%
Shaker (Barler's Pat.) Flour Sifters.....₩ doz $3.00; ₩ gr $31.00
Electric.....₩ gr $33.00
A. & W. Sifters.....₩ doz 2.00
Hunter's.....₩ doz $3.00

Sieves, Wooden Rim—

	Iron.	Plated
Mesh 18, Nested, ₩ doz..	80¢	$1.00
Mesh 20, Nested, ₩ doz..	95¢	1.10
Mesh 24, Nested, ₩ doz..	$1.15	1.25

Skeins, Thimble—

Western list.....75&5@75&10%
Columbus Wrt. Steel, Special net prices
Coldbrookdale Iron Co.....60%
Seneca Falls Pattern.....60%
Utica P. S. T. Skeins.....60%
Utica Turned and Fitted.....35%

Slates—

School, by case.....50&10@50&10&10%

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.).....65%
Fitch's (Bristol).....50&10%
Hotchkiss.....10%
Andrews.....50%
Sargent's Patent Guarded.....70&10&10%
German, new list.....40&10%
Covert.....50&10&5&2%
Covert, New Patent.....60&10&5&2%
Covert, New R. E.....60&10&5&2%
Covered Spring.....60&10&10%
E. Covert's Triumph.....33⅓%

Snaths, Scythe.

List.....50%

Soldering Irons—See Irons, Soldering.

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8¼-inch, ₩ doz., No. 5, $8; No. 5X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

Spoke Shaves—See Shaves, Spoke.

Spoke Trimmers—See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list.....70&10%
Buffalo S. S. & Co.....33⅓&2%

Silver-Plated—(4 mos. or 5% cash 30 days).

Meriden Brit. Co., Rogers.....40&15%
C. Rogers & Bros.....40&15%
Rogers & Bro.....40&15%
Reed & Barton.....40@40&5%
Wm. Rogers Mfg. Co.....40, 15&5%
Simpson, Hall, Miller & Co.....40, 15&5%
Holmes & Edwards Silver Co....40, 15&5%
L. Boardman & Son.....50&12½&5

Miscellaneous.

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver.....50&10&5%
No. 30 Silver Metal.....50&10&5%
No. 24 German Silver.....50&10&5%
No. 50 Nickel Silver.....50&5%
No. 49 Nickel Silver.....50&10&5%
Wm. Rogers Mfg. Co.
Rogers' Silver Metal.....50, 10&5%
18% Rogers' German Silver.....60&5%
22% Rogers' Nickel Silver.....50&5%
German Silver.....50@50&5
German Silver, Hall & Elton..50&5% cash
Nickel Silver.....50&5@50&10&5% cash
Britannia.....60@60&5%
Boardman's N'ck'l Silver, list July 1, 1891.....60&7½&5%
Boardman's Britannia Spoons, case lots.....60&5% cash

Springs—

Door.—

Torrey's Rod, 30 in.....₩ doz $1.20@1.25
Gray's, ₩ gr., $20.00.....25%
Bee Rod ₩ gr., $20.00.....20@25%
Warner's No. 1, ₩ doz, $2.50; No. 2, $3.30.....50&50&5%
Gem (Coil), list April 19, 1886....10@15%
Star (Coil), list April 19, 1886...20@30&5%
Victor (Coil).....60&10@60&10&5%
Champion (Coil).....60&10@60&10&10%
Cowell's....No. 1, ₩ doz, $12.00; No. 2, $15.00.....50@50&10%
Rubber, complete, ₩ doz, $4.50...55&10%
Hercules.....50@50&10%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll.....60&10&10%
Cliff's Bolster Springs.....25%

Squares—

Steel and Iron, Nickel-Plated.....30&10@30&10&10%
Try Square and T Bevels...60&10@60&10&10%
Disston's Try Square and T Bevels....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares.....25%
Avery's Flush Bevel Squares.....40%
Avery's Bevel Protractor.....50%

Squeezers.

Fodder.—

Blair's.....₩ doz $2.00
Blair's "Climax".....₩ doz $1.25

Lemon—

Porcelain Lined, No. 1....₩ doz $6.00, 25&20%
Wood, No. 2.....₩ doz $3.00, 25%
Wood, Common.....₩ doz $1.70@1.75
Dunlap's Improved....₩ doz $3.75, 20%
Sammis....No. 1, $5.00; No. 2, $6; 12, $18 ₩ doz.....25&10%
Jennings' Star.....₩ doz $2.50
The Boss.....₩ doz $2.50
Dean's..Nos. 1, ₩ doz $6.50; 2, $3.35; 2, $1.90; Queen, $2.50
Little Giant.....50@50&5%
King.....40&5%
Hotchkiss Straight Flash....₩ doz $12.00
Silver & Co., Glass.....₩ gro. $9.00
Manny Lemon Juice Extractor:
Standard.....₩ doz $0.75@$1.00
Improved.....₩ doz $4.00

Standard Fiber Ware—See Ware, Standard Fiber.

Staples.

Bitad—

Barbed, ½ in. and larger.....₩ ℔ 7@7½¢
Barbed, ¾ in.....₩ ℔ 8@8½¢
Fence staples, Galvanised. } Same price as B'rb'd Wire.
Fence Staples, Plain. } See Trd. Rep.

Steelyards.....40&10@50%

Stocks and Dies—

Blacksmith's
Waterford Goods.....33⅓@40%
Butterfield's Goods.....33⅓@40%
Lightning Screw Plate.....25@30%
Reece's New Screw Plates....33⅓&5&40%
Reversible Ratchet.....20
Gardner.....33%

Stops, Bench.

Morrill's.....₩ doz $9, 50%
Hotchkiss's.....₩ doz $8, 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25&10&5%
McGill's.....₩ doz $8.....10%
Cincinnati.....25&10%
Terrell's Nos. 1 and 2, ₩ doz., $3; No. 3, $3.60.....30%

Stone—

Hindostan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 4½¢
Sand Stone.....₩ ℔ 2½¢
Washita Stone, Extra.....₩ ℔ 22@23¢
Washita Stone, No. 1.....₩ ℔ 19@20¢
Washita Stone, No. 2.....₩ ℔ 12@13¢
Washita Slips, No. 1, Extra..₩ ℔ 44@46¢
Washita Slips, No. 1.....₩ ℔ 32@35¢
Arkansas Stone, No. 1, 4 to 6 in₩ ℔ $1.50
Arkansas Stone, No. 1, 6 to 9 in₩ ℔ $1.85
Turkey Oil Stone, 4 to 8 in.....₩ ℔ 40¢
Turkey Slips.....₩ ℔ $1.00@1.50
Lake Superior, Chase.....₩ ℔ 12¢
Lake Superior Slips, Chase.....₩ ℔ 20¢
Seneca Stone, Red Paper Brand....₩ ℔ 18@20¢
Seneca Stone, High Rounds..₩ ℔ 20@25¢
Seneca Stone, Small Wheels..₩ gro $24.00

Stove Polish—See Polish, Stove.

Stretchers, Carpet.

Cast Steel, Polished.....₩ doz $2.25
Cast Iron, Steel Points.....₩ doz 80¢
Socket.....₩ doz $1.75
Bullard's.....25@25&10%

Strops, Razor—

Genuine Emerson.....60@60&5%
Imitation " .....₩ doz $2.00, 20&10&5%
Torrey's.....30%
Badger's Belt and Com.....₩ doz $2.00
Lamont Combination.....₩ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89.50%
Electric Cultery Co.....Net

Stuffers or Fillers, Sausage—

Miles' "Challenge," ₩ doz $20, 50@50&5%
Perry.....₩ doz, No. 1, $15.00; No. 0, $21.00.....50&5@50&10%
Draw Cut No. 4, each $50.00.....20%
Enterprise Mfg. Co.....20&10@30%
Silver's.....40&10%

Sweepers, Carpet.

Bissell No. 5.....₩ doz $17.00
Bissell No. 8.....₩ doz 20.00
Bissell, Grand.....₩ doz $36.00
Stand rd.....₩ doz $24.00
Domestic.....₩ doz $21.0
Domestic, No. 2.....₩ doz $32.00
Grand Rapids.....₩ doz $34.0
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic.....₩ doz $15.00
Improved Parlor Queen,
Nickeled.....₩ doz $27.00
Japanned.....₩ doz $24.00
Excelsior.....₩ doz $22.00
Garland.....₩ doz $18.00
Parlor Queen.....₩ doz $24.00
Housewife's Delight.....₩ doz $15.00
Queen.....₩ doz $16.00
Queen, with band.....₩ doz $18.00
King.....₩ doz $30.00
Weed, Improved.....₩ doz $13.00
Hub.....₩ doz $16.00
Cog-Wheel.....₩ doz $16.00
Easy.....₩ doz $22.00
Monarch.....₩ doz $22.00
Goshen.....₩ doz $21.0
Ladies' Friend.....₩ doz $15.00
Advance.....₩ doz $13.00
Supreme.....₩ doz $25.00

Tacks, Brads, &c.—

List October 19, 1889. Old established standard Weights Short Weight goods are sold at lower prices.

Carpet Tacks—
American, Blued..... 72½%
American, Tin'd and Cop'd ..70%
Steel, Bright and Blued... 72½%
Steel, Tinned and Coppered 65%
Swedes Iron, Blued..... 75%
Swedes Iron, Tinned..... 78%
American Iron Tacks..... 7½%
Swedes Iron Tacks—
S. S., Blued..... 71%
S. S., Tinned..... 74%
Lanc., Blued..... 60%
Lanc., Tinned..... 63½%
Gimp and Lace Tacks—
S. S., Blued..... 67½%
S. S., Tinned..... 71%
Lanc., Blued..... 60%
Lanc., Tinned..... 63½%
Basket and Trimmers' Tacks—
Lanc..... 61½%
S. S..... 69½%
Hungarian Nails..... 64½%
Common and Patent Brads..... 67%
Leathered Tacks..... 30%
Brush Tacks..... 63½%
Looking Glass Tacks..... 35%
Picture-Frame Points..... 43½%
Finishing Nails..... 61½%
Trunk and Clout Nails—
Black..... 67½%
Tinned or Coppered..... 71%
Basket Nails..... 61½%
Chair Nails..... 56½%
Cigar-Box Nails..... 52%
Tin Capped Nails..... 50%

Extra discount 5&2½.

Miscellaneous—

D'ble-Point..12d count85&10@85&10&10%
Double Point, 100 count.....90%
Wire Carpet Nails.....&10%
Plymouth Rock Steel Carpet Tacks..35%
Wire Brads and Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list.....50&10%

Tapes, Measuring—

American.....40@40&5%
Spring.....40%
Chesterman's, Regular list.....35@30%

Thermometers—

Tin Case.....80@80&10%

Thimble Skeins—See Skeins.

Ties, Bale— Standard Wire, list.....80&10%

Tinners' Shears, &c.—See Shears Tinners', &c

Tinware—
Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&10&5%

Tire Benders, Upsetters, &c—
See Benders and Upsetters, Tire.

Tools.
Coopers'—
Bradley's.....20%
Barton's.....30@30&5%
L. & I. J. White.....30&5%
Albertson Mfg. Co.....30%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Shaves, Cincinnati Tool Co.....30%
Lumber.
Ring Peavies, "Blue Line"...$ doz $90.00
Ring Peavies, Common.....$ doz $18.00
Steel Socket Peavies.....$ doz $21.00
Mall. Iron Socket Peavies.....$ doz $19.00
Cant Hooks, "Blue Line".....$ doz $16.00
Cant Hooks, Common Finish..$ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....$ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....$ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....$ doz $12.00
Hand Spikes....$ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, $ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, $ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, $ doz, 12 ft., $8.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, $ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....$ doz $13.00
Saw.
Atkins' Perfection.....$ doz $12.00
Atkins' Excelsior.....$ doz $6.00
Atkins' Giant.....$ doz $4.00

Tobacco Cutters—See Cutters, Tobacco.

Transom Lifters — See Lifters, Transom.

Traps—
Game—
Newhouse.....40@40&5%
Oneida Pattern.....70&10%
Game, Blake's Patent.....40&10&5%
Mouse and Rat—
Mouse Wood, Choker, $ doz holes, 9@10¢
Mouse, Round Wire.....$ doz $1.50 10¢
Mouse, Cage, Wire.....$ doz $2.50, 10¢
Mouse, Catch-'em-alive.....$ dz $2.50 15¢
Mouse, Bonanza.....$ doz $0.90@$1.00
Rat, Decoy.....$ gr $10.00, 10¢
Ideal.....$ gr $10.00
Cyclone.....$ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, $ doz., 75¢; in full cases, $ doz. 60¢@65¢
Hotchkiss Imp. Rat Killer..$ gro $13.50
Hotchkiss New Rat Killer...$ gro $16.50
Schuyler's Rat Killer.....$ gro $15.00

Triers—
Butter and cheese.....25%

Trimmers, Spoke.
Bonney's.....$ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 $ doz. 55&10%
Douglas'.....$ doz $9.00, 20%
Cincinnati.....25%

Trowels—
Lothrop's Brick and Plastering.....20&10&5 25%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering.....25%
Peace's' Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%
Cleves' Angle Trowel, $ gro. $15, net @10%

Trucks, Warehouse, &c.—
B. & L. Block Co.'s list, '92.....40%

Tubes, Boiler—
See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 2, ¼ and ⅛ ℔ Balls	35¢	31¢
No. 12, ¼ and ⅛ ℔ Balls	32¢	30¢
No. 18, ¼ and ⅛ ℔ Balls	30¢	29¢
No. 24, ¼ and ⅛ ℔ Balls	30¢	29¢
No. 36, ¼ and ⅛ ℔ Balls	18¢	28¢

No. 264, Mattress, ¼ and ⅛ ℔ Balls 53@54¢
Chalk Line, Cotton, ⅛ ℔ Balls.....25¢
Mason Line, Linen, ⅛ ℔ Balls.....55¢
2-Ply Hemp, ¼ and ⅛ ℔ Balls (Spring Twine).....15½¢
2-Ply Hemp, 1 ℔ Balls.....15¢@16½¢
3-Ply Hemp, 1½ ℔ Balls.....15¢@15½¢
Cotton Wrapping, 5 Balls to ℔ ..15¢@15¢
2, 3, 4 and 5-Ply Jute, ⅛ ℔ Balls.....10¢
Wool.....6¢@6½¢
Paper.....12½@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz..18¢

Vises—
Solid Box.....50&10@50&10&5%
Parallel—
Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....30%
Massey Quick Action.....20 @ 25 %
Saw Filers—
Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....25½&10@35½&10&10%
Stearn's Silent Saw Vises.....35½@36%
Sargent's.....60%&10%
Hopkins'.....$ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%
Miscellaneous.
Combination Hand Vises.....$ gr $42.00
Cowell Hand Vises.....30%
Bauer's Pipe Vises.....10%
Cincinnati.....35&10%
Enterprise Pipe Vises, each.....$3.00
Massey Combination Pipe.....40 %

Wads—Price per M. Dis. 30&5%

U.M.C.&W. R. A.—B. E., 11 up...	63¢
U.M.C.&W. R. A.—B. E., 9&10...	82¢
U.M.C.&W. R. A.—B. E., 8.....	96¢
U.M.C.& W.R. A.—B. E., 7.....	$1.10
U.M.C.&W. R. A.—P. E., 11 up..	1.15
U.M.C.&W. R. A.—P. E., 9&10..	1.50
U.M.C.&W. R. A.—P. E., 8.....	1.70
U.M.C.&W. R. A.—P. E., 7.....	1.80
Eley's B. E., 11 up.....	$1.70@$1.75
Eley's P. E., 11@10.....	2.00@ 2.35

Wagon Boxes—See Boxes, Wagon.

Washer Cutters—See Cutters Washer.

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enameled, &c.
Cast Iron, Hollow—
Stove Hollow-Ware—
Ground.....60&10%
Unground.....50&10&10%
White Enameled-Ware—
Maslin Kettles.....75&75&5%
Boilers and Saucepans.....60@60&5%
Tinned Boilers and S'pans.....60@60&5%
Rustless Hollow-Ware.....50@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%
Enameled—
Agate and Granite Ware, list Jan. 1, 1889.....33½&10%
Ironclad Enameled Ware...dis 33½&10%
Kettles—
Galvanized Tea-Kettles—

Inch....	6	7	8	9
Each....	55¢	60¢		75¢

Standard Fiber—

	Per Dozen. Plain.	Doz'r'd
Wash-Basins, 10½ in.....	$2.00	$2.25
Wash-Basins, 12 in.....	2.25	2.75
Keelers, 11¼ in.....		4.50
Cuspidors.....		3.00
Spittoons, "Daisy," 8 in....	4.00	4.50
Peck Measure.....	4.00	
Half-peck Measure.....	3.50	

See also Pails.
Indurated Fiber—25%
Spittoons, No. 2, $ doz.....$3.40
Basins, Slinged, $ doz., No. 2.....$3.00
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), $ nest.....$7.50
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), $ nest.....$2.90
Butter Bowls 15, 17 and 19-inch (3 pieces), $ nest.....$1.70
Liquid Measures, pt., qt., 2 qt. and funnel (4 pieces) $ set.....$1.80
See also Pails.
Silver Plated, Hollow—
4 mo. or 5 % cash in 30 days.
Reed & Barton.....
Meriden Britannia Co.....
Simpson, Hall, Miller & Co.....
Rogers & Brother.....
Hartford Silver Plate Co.....
William Rogers Mfg. Co.....
} 40&5%
} 40&5&5%

Washers—
Size hole..... 5-16 ⅜ ½ ⅝ to 1⅜
Washers..... 6 5 3.50¢ 3
In lots less than 200 ℔, $ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Wedges—
Iron.....$ ℔ 3½¢
Steel.....$ ℔ 3½¢

Weights, Sash—
Solid Eyes.....$ ton $18@$19

Well Buckets, Galvanized—See Buckets, Well, Galvanized.

Wheels, Well.
8 in., $2.25; 10 in., $3.70; 12 in., $3.80

Wire and Wire Goods—
Iron—
Market.
Br. & Ann., Nos. 0 to 18...75&10@80%
Cop'd, Nos. 0 to 18.....75&5@75&10%
Galv., Nos. 0 to 18.....70@70&10%
Tin'd, Tin'd list Nos. 0 to 18.70@70&10%
Stone,
Br. and Ann'd, Nos. 16 to 18.....80%
Bright and Ann'd, Nos. 19 to 26...80&5%
Br. and Ann'd, Nos. 27 to 36...82½&5%
Tinned.....
Tinned Broom Wire 18 to 21, $ ℔...4½¢
Galvanized Fence, Nos. 8 and 9..70&10%
Brass, list Jan. 18, 1884.....25@33½%
Copper, list Jan. 18, 1884.....33½@40%
Annealed Wire on Spools.....60%
Malin's Steel and Tin'd on Spools.....60%
Malin's Brass and Cop. on Spools.....50%
Tate's Spooled, Tin'd & Annealed..60&5%
Tate's Spooled Cop. and Brass.....50%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 8, 80%
Steel Music Wire, 12 to 20...60@70¢ $ ℔
Wire Clothes Lines, see Lines.
Wire Picture Cord see cord.
Bright Wire Goods—
Standard list.....85%
Wire Cloth and Netting.
Painted Screen Cloth, good quality $ 100 sq. ft., $1.40
Galvanized Wire Netting.....70&10@75%

Wire, Barb.—Prices unsettled. See Trade Report.

Wire Rope—See Rope, Wire.

Wrenches—
American Adjustable.....40%
Baxter's Adjustable "S".....40&10&50%
Baxter's Diagonal.....40&10&50%
Coes' Genuine.....50&5%
Coes' "Mechanics".....50&10&5%
Girard Standard.....65&10%
Lamson & Sessions' Engineers'..60&10%
Lamson & Sessions' Standard....70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
} 75&10@
} 70&10&5%
Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....35%
Brigg's Pattern.....35%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....$ doz $4.00, 40%
Webster's Pat. Combination.....35%
Boardman's.....50&10%
Always Ready.....35&5%
Alligator.....50%
Donohue's Engineer.....30&10%
Acme, Bright.....50&5%
Acme, Nickeled.....40&5%
Hercules.....70%
Walker's.....35&5%
Diamond Steel.....35&5%
Cincinnati Brace Wrenches.....35&10%
Tafts' Vise Wrench.....55&10&5%

Wringers, Clothes—
Am. Wringer Co.'s list, July 15, 91..2% cash
Colby Wringer Co., list Sept. 1, '91.2% cash
Lovell Mfg. Co., list Jan 1, 1892 2 % cash
Peerless Mfg. Co, list Feb., 1892..2% cash

Wrought Goods—
Staples, Hooks, &c., list March 17, 1892 30&2 %

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.

Linseed, City, raw..per gal.	40	@	..
Linseed, City, boiled.....	43	@	..
Linseed, Western, raw.....	39	@	..
Lard, City, Extra Winter..	57	@	58
Lard, City, Prime.....	56	@	57
Lard, City, Extra No. 1.....	44	@	45
Lard, City, No. 1	40	@	42
Lard, Western, prime.....	55	@	56
Cotton-seed, Crude, prime..	28½	@	29
Cotton-seed, Crude, off grades.....	26	@	27
Cotton-seed, Summer Yellow, prime.....	31½	@	32
Cotton-seed, Summer Yellow, off grades.....	29	@	31
Sperm, Crude.....	69	@	70
Sperm, Natural Spring.....	67	@	70
Sperm, Bleached Spring....	72	@	75
Sperm, Natural Winter.....	75	@	76
Sperm, Bleached Winter...	78	@	81
Whale, Crude.....	..	@	45
Whale, Natural Winter.....	54	@	55
Whale, Bleached Winter....	57	@	58
Whale, Extra Bleached....	59	@	60
Sea Elephant, Bleached Winter	62	@	63
Menhaden, Crude, Sound...	..	@	31
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed..	37	@	38
Menhaden, Bleached W'ter.	38	@	39
Menhaden, Extra Bleached	40	@	42
Tallow, City, prime.....	44	@	45
Tallow, Western, prime....	42½	@	43
Cocoanut, Ceylon.....	5¾	@	5¾
Cocoanut, Cochin.....	6¾	@	6¾
Cod, Domestic	38	@	40
Cod, Foreign.....	43	@	45
Red Elaine	34	@	36
Red Saponified..... $ ℔	4½	@	5
Bank.....per gal	35	@	36
Straits.....	36	@	37
Olive, Italian, bbls.....	60	@	62
Neatsfoot, prime	59	@	60
Palm, prime, Lagos....$ ℔	6	@	6¼

Mineral Oils.

Black, 29 gravity, 25 @ 30 cold test.....per gal	7	@	7¼
Black, 29 gravity, 15 cold test.....	8	@	8½
Black, 29 gravity, summer.	6	@	6¼
Cylinder light filtered.....	15	@	
Cylinder, dark, filtered	13	@	15
Paraffine, 23¾ @ 24 gravity.	13¼	@	14
Paraffine, 25 gravity.....	12¾	@	13
Paraffine, 28 gravity.....	9	@	9¼
Paraffine, red, 23¾@24 gr'ty	13	@	14

Paints and Colors.

Barytes, Foreign, $ ton.	$22.00	@	$24.00
Barytes, Amer. floated...	30.00	@	32.00
Barytes, Amer. No. 1....	17.00	@	19.00
Barytes, Amer. No. 2....	13.00	@	16.00
Barytes, Amer., No. 3....	11.00	@	12.00
Blue, Celestial..... $ ℔	6	@	8
Blue, Chinese	40	@	50
Blue Prussian.....	25	@	40
Blue, Ultramarine	8	@	25
Brown, Spanish	½@		1
Brown, Vandyke, Amer..	2	@	3½
Brown, Vandyke, English	6	@	8
Carmine, No. 40, in bulk	3.10	@	..
Carmine, No. 40, in boxes or barrels	3.20	@	..
Carmine, No. 40, in ounce bottles.....	4.20	@	..
Chalk, in bulk..... $ ton.	1.50	@	1.90
Chalk, in bbls..$ 100 ℔.	33	@	40
China Clay, English..... $ ton.	13.00	@	18.00
Cobalt Oxide, prep'd.....	9.00	@	11.00
Cobalt Oxide, black..... lots 100 ℔	2.50	@	....
Cobalt, Oxide, black..... less 100 ℔	2.65	@	2.90
Green, Paris, in bulk....	13	@	15½
Green Paris, 170 @ 175 ℔ kegs.....	14	@	16
Green, Paris, small pack.	15½	@	18
Green, Chrome, ordinary	6	@	12
Green, Chrome, pure....	22	@	25
Lead, Eng., B.B. white....	8½	@	10
Lead, Amn. White, dry or in oil:			
Kegs, lots less than 500 ℔....	7¼	@	7¾
Kegs, lots 500 ℔ to 5 tons....	6¾	@	7
Kegs, lots 5 tons to 12 tons..	6¾	@	6¾
Kegs, lots 12 tons and over..	6¼	@	6¾
Lead White in oil 25 ℔ tin pails add to keg price.		@	⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price.		@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.		@	2½
Lead, Red, bbls. and ½ bbls....	6¼	@	7¼
Lead Red, kegs.....	6¼	@	7¼
Litharge, kegs.....	6½	@	7½
Litharge, bbls. and ½ bbls.	6¾	@	7¾

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 3¼ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.35	@	1½
Ocher, French Washed.....	1½@		2¾
Ocher, German Washed...	1½@		3
Ocher, American.....	½@		1½
Orange Mineral, English...	8½@		9
Orange Mineral, French....	10	@	10½
Orange Mineral, German ..	8½@		09
Orange Mineral, American..	8½	@	8½
Paris White, English Cliff-stone.....	1.00	@	1.15
Paris White, American.....	70	@	75
Red, Indian, English.....	5½@		7
Red, Indian, American....	2	@	6½
Red, Turkey.....	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American.. $ 100 ℔.	1.00	@	1.10
Red, Venetian, English....	1.20	@	1.35
Sienna, Italian, Burnt and Powd. $ ℔	4	@	5
Sienna, Ital., Burnt Lumps	1½@		2½
Sienna, Ital., Raw, Powd..	1½@		2½
Sienna, Ital., Raw Lumps..	1½@		2½
Sienna, American, Raw ...	1½@		1¾
Sienna, American, Burnt and Powdered.....	1½@		1¾
Talc, French	1½@		1½
Talc, American.....	0½@		1½
Terra Alba, Fr'ch. $ 100 ℔	75	@	80
Terra Alba, English	70	@	75
Terra Alba, American No.1	70	@	75
Terra Alba, American No.2	45	@	50
Umber, Turkey, Bnt. and Powd..... $ ℔	3½@		4
Umber, Turkey Bnt.Lm	2½@		3
Umber, Turkey, Raw and Powdered.....	3½@		..
Umber Turkey, R'w Lmps	2½@		2¾
Umber, Turkey, Bnt. Amer.	1½@		1¾
Umber, Turkey, R'w Amer.	1½@		1¾
Yellow, Chrome.....	10	@	25
Vermilion Americ. Lead..	11½@		17
Vermilion, Quicks'er, bulk.	57	@	..
Vermilion, Quicks'er, bags.	58	@	..
Vermilion Quicksilver, smaller pkgs.....	62	@	..
Vermilion English Imnort	85	@	90
Vermilion, Imitation, Eng.	8	@	35
Vermilion, Trieste.....	90	@	92½
Vermilion, Chinese.....	92½@		95
Whiting, Common. $ 100 ℔	35	@	45
Whiting, Gilders'.....	50	@	60
Zinc, American, dry.... $ ℔	4½@		5
Zinc, French, Red Seal....	..	@	8½
Zinc, French, Green Seal..	..	@	8½
Zinc, French, V. M. X.....	..	@	7
Zinc, Antwerp, Red Seal...	..	@	7½
Zinc, Antwerp, Green Seal	..	@	8½
Zinc, German, L. Z. O....	..	@	6½
Zinc, V M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10½@		11¼
lots less than 1 ton	11	@	11¾
Zinc, V. M. in Poppy Oil, Red Seal.....	..	@	..
lots of 1 ton and over....	10	@	10½
Lots of less than 1 ton....	10¼@		10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10- bbl. lots of one or assorted grades, 1 %; 25 bbls, 2 %, 50 bbls, 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Black, Drop, Frankfort....	25	@	30
Black, Drop, English.....	12	@	15
Black, Drop, Domestic	7	@	10
Black, Lampblack, Best....	20	@	35
Black, Lampblack, Common	7	@	18
Black, Ivory.....	8	@	15
Blue, Chinese.....	35	@	40
Blue, Prussian.....	30	@	45
Blue, Ultramarine.....	12	@	18
Brown, Vandyke.....	7	@	12
Green, Chrome.....	8	@	13
Green, Paris.....	16	@	18½
Sienna, Raw.....	7	@	14
Sienna, Burnt.....	7	@	14
Umber Raw.....	7	@	10
Umber, Burnt	7	@	10

Putty.

In barrels and ½ bbls....	.01¾@		.01¾
In tubs.....	.01¾@		.01¾
In tin cans.....	.01¾@		.02¼
In bladders.....	.01¾@		.02¼

Spirits Turpentine.

In regular bbls.....	35½@		..
In machine bbls.....	35	@	..

Glue.

Low Grade.....$ ℔	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French.....	10	@	22
English.....	10	@	15
Irish	13	@	

CURRENT METAL PRICES.

APRIL 20, 1892.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports

IRON AND STEEL.

Bar Iron from Store.

Common Iron:
¾ to 2 in. round and square.. } ₩ ℔ 1.90 @ 2.00¢
1 to 6 in. x ⅝ to 1 in.... ....
Refined Iron:
¾ to 2 in. round and square. }
1 to 4 in. x ⅝ to 1½ in.... ... } ₩ ℔ 2.00 @ 2.20¢
4½ to 6 in. x ⅝ to 1 in. .... }
1 to 6 in. x ¼ and 5-16 ..... ₩ ℔ 2.20 @ 2.40¢
Rods—⅝ and 11-16 round and sq. ₩ ℔ 2.10 @ 2.30¢
Bands—1 to 6 x 3-16 to No. 12.. ₩ ℔ 2.30 @ 2.50¢
"Burden Best" Iron, base price. ₩ ℔.... ...3.00¢
Burden's "H. B. & S." Iron, base price..... ..... ₩ ℔.. .....2.80¢
"Ulster" .... ₩ ℔..... 3.00¢
Norway Bars .... 3.75 @ 4.00¢
Norway Shapes .... 4.50 @ 5.00¢

Merchant Steel from Store.

	Per pound
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2¾¢
Best Cast Steel, base price in small lots.	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store.

Black.

	Common American.	R. G. Cleaned American.
Nos. 10 to 16.... ...₩ ℔ 3 @		3½¢
17 to 20 .....₩ ℔ 3¼ @ ...		3¾¢
21 to 24.....₩ ℔ 3¼ @		3¾¢
25 and 26. ....₩ ℔ 3⅜ @		3¾¢
27.... .....₩ ℔ 3½ @		3⅞¢
28.....₩ ℔ 3⅝ @		4 ¢
American B. B.....₩ ℔ 4¢ @ 4¼¢		

Galvanized Sheet Iron.

	B. B.	2d qual
Nos. 10 to 16 ....₩ ℔ 4.20¢		4 ¢
17 to 22.... ...₩ ℔ 4.60¢		4.30¢
23 to 24.....₩ ℔ 4.90¢		4.70¢
25 to 26.. .....₩ ℔ 5.30¢		5 ¢
27..... .....₩ ℔ 5.60¢		5.30¢
28 .....₩ ℔ 6 ¢		5.70¢
29 to 30 . ...₩ ℔ 7 ¢		6.70¢
Genuine Russia, according to assortment ....₩ ℔ 11½¢ @ 11½¢		
Patent Planished .....₩ ℔ A, 10¢; B, 9¢		
Craig Polished Sheet Steel.....₩ ℔, 8½¢		

English Steel from Store.

Best Cast..... .....₩ ℔ 15 ¢	
Extra Cast ....₩ ℔ 16½ @ 17 ¢	
Swaged Cast..... .....₩ ℔ 16 ¢	
Best Double Shear .....₩ ℔ 15 ¢	
Blister, 1st quality..... .....₩ ℔ 12 ¢	
German Steel, Best..... ..₩ ℔ 10 ¢	
2d quality .....₩ ℔ 9 ¢	
3d quality..... ..₩ ℔ 8 ¢	
Sheet Cast Steel, 1st quality..... ....₩ ℔ 15 ¢	
2d quality .. ..₩ ℔ 14 ¢	
3d quality .....₩ ℔ 12½¢	
R. Mushet's "Special"..... .....₩ ℔ 48 ¢	
" " "Titanic" ....₩ ℔ 20 ¢	

METALS.

Tin.

	Per ℔
Banca, Pigs.....	22½@ ..¢
Straits, Pigs..... 21	@21½¢
Straits in Bars	23 ¢

Tin Plates.

Duty: 2.2 cents per pound.

Charcoal Plates.—Bright.

Guaranteed Plates command special prices, according to quality. Per box.

Melyn and Calland Grade.	IC, 10 x14..	@	$6.10
" " "	IC, 12 x12..	@	6.75
" " "	IC, 14 x20..	@	6.50
" " "	IC, 20 x28..	@	13.00
" " "	IX, 10 x14..	@	8.50
" " "	IX, 12 x12..	@	8.75
" " "	IX, 14 x20..	@	8.50
" " "	IX, 20 x28..	@	17.00
" " "	DC, 12½x17..	@	6.00
" " "	DX 12½x17..	@	8.00
Allaway Grade	IC, 10 x14..	@	6.00
" "	IC, 12 x12..	@	6.25
" "	IC, 14 x20..	@	6.00
" "	IC, 20 x28..	@	12.00
" "	IX, 10 x14..	@	7.50
" "	IX, 12 x12..	@	7.75
" "	IX, 14 x20..	@	7.50
" "	IX, 20 x28..	@	15.00
" "	DC, 12½x17.	@	5.50
" "	DX, 12½x17..	@	7.00

Coke Plates.—Bright.

Steel Coke.—IC, 10 x 14, 14 x 20..	$5.70	@	$5.75
10 x 20..		@	8.50
20 x 28..	11.50	@	12 00
IX, 10 x 14, 14 x 20..		@	7.00
BV Grade.—IC, 10 x 14, 14 x 20..		@	5.75

Charcoal Plates.—Terne.

Guaranteed Plates command special prices according to quality.

Dean Grade. IC, 14 x 20.....		@	$5.75
20 x 28		@	11.00
IX, 14 x 20		@	6.50
20 x 28		@	13 00
Abecarne Grade.—IC, 14 x 20... ...		@	5 65
20 x 28 .. 10.75		@	11 00
IX 14 x 20 . ..		@	6 50
20 x 28		@	13 00

Tin Boiler Plates.

IXX, 14 x 20.....112 sheets.....		@	$13.3[illegible]
IXX, 14 x28 112 sheets....		@	14 0
IXX 14 x [illegible] 112 sheets		@	16.00

Copper.

DUTY: Pig, Bar and Ingot, 1½¢; Old Copper, 1¢ ₩ ℔. Manufactured (including all articles of which Copper is a component of chief value), 35 ⅌ ad valorem.

Ingot

Lake	@ 13 ¢
Ansonia Grade Arizona.	@ 12½¢
Ansonia Grade Casting	@ 12¼¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, December 5, 1890. Subject to a discount of 10 ⅌ @ 20 ⅌, according to size of order.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	23	24	24	25	28	28	30
30		72	22	23	23	24	25	27	31	...
36	96		22	23	23	24	26	30	33	....
36		96	22	23	23	25	27	31	35	....
48	96		22	23	24	26	28	32	....	....
48		96	22	23	25	27	29	33	....	....
60	96		22	23	25	27	29	34	....	....
60		96	23	23	28	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84		96	24	25	....	....	....	....	....	....
Over 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ⅝ inch diameter and over, per pound..... 22¢
Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.
Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ ℔ over the foregoing prices.
Cold or Hard Rolled Copper lighter than 14 oz. ₩ square foot, 2¢ ₩ ℔ over the foregoing prices.

Copper Bottoms, Pits and Flats.

	Per pound
14 ounce to square foot and heavier.....	26¢
12 ounce and up to 14 ounce to square foot....	27¢
16 ounce and up to 12 ounce.....	29¢
Lighter than 10 ounce.....	32¢

Circles less than 8 inches diameter 2 cents per pound additional.
Circles over 13 inches diameter are not classed as Copper Bottoms.
10 ⅌ discount.

Copper Wash Bowl Bottoms.

Tinned..... ₩ ℔ 34¢, 10⅌

Tinning.

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each.....	8¢
Tinning sheets on one side, 30 x 60 each.....	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each.	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each.....	12¢
Tinning sheets on one side, other sizes, per square foot.....	2½¢
For tinning both sides double the above prices.	

Planished Brass and Copper.

Not larger than 30 x 60.

16 oz. and heavier.	24¢ ₩ ℔
14 oz.....	25¢ ₩ ℔
12 oz.	27¢ ₩ ℔

Seamless Brass Tubes.

Net.

Dec. 16, 1891.

O. G.	N. G.	⅛	¼	⅜	½	⅝	¾	1	1¼
8-14	6-12	30	26	28	22	21	20	17	
15	13	31	26	24	23	22	21	18	
16	14	32	27	25	24	23	22	18	
17	15	33	28	26	23	24	23	19	
18	16	35	29	27	25	24	23	20	
19	17	36	30	28	27	26	25	22	
20	18-19	37	32	30	29	28	27	24	
21	20	39	34	32	31	30	29	27	
22	21	41	35	34	32	31	30	29	
23	22	43	37	35	34	33	32	32	
24	23	46	39	37	36	34	33	34	
25	24	49	42	39	38	37	36	38	

Copper Tubes, 3¢ ₩ ℔ additional.
Copper Bronze and Gilding Tube, 3¢ ₩ ℔ additional

Brassed Brass Tubing To No. 20, inclusive.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch.....	45¢
Plain, 5-16 inch.....	45¢
Plain, ¼ inch.....	60¢
Plain, 3-16 inch.....	$1.00
Plain, ⅛ inch.....	1.80
Fancy Tubing, Brass, to No. 20, inclusive.....	45¢ ₩ ℔
Bronze Tubing, 3¢ ₩ ℔ more than Brass.	
Discount from list	30 @ ..⅌

Roll and Sheet Brass.

(*Brown & Sharpe Standard Gauge.*)

Common High Brass Wider than and including	in. 2 10	in. 10 12	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24
To No. 20, inclusive...	.21	.22	.23	.25	.27	.29	.31	.32
Nos. 21, 22, 23 and 24.	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26.....	.22½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28..... ...	.23	.24	.25	.28	.30	.32	.34	.36

Common High Brass: Wider than and including	in. 24 26	in. 26 28	in. 28 30	in. 30 32	in. 32 34	in. 34 36	in. 36 38	in. 38 40
To No. 20, inclusive....	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24.	.37	.40	.43	.47	.51	.56	.61	.66
Nos. 25 and 26.....	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28.....	.39	.42	.45	.49	.53	.58	.65	.75

Discount from List 10 ⅌ to 25 ⅌.

Brass and Copper Wire.

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive.....	$0.22	$0.24	$0 26	$0.30
No. 17 and No. 18.....	.23	.25	.27	.31
No. 19 " " 20.....	.24	.26	.28	.32
No. 21, or 0.032 diam...	.25	.27	.29	.33

Discount 10 ⅌ to 25 ⅌.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 23	$0 26	$0.28	$0 30	$0 34
No. 23.....	.28	.30	.32	.36
No. 24.....	.30	.32	.34	.38
No. 25.....	.32	.34	.36	.40
No. 26..... ..	.35	.37	.39	.43
No. 27...	.38	.40	.42	.46
No. 28.....	.42	.44	.46	.51
No. 29.....	.45	.47	.49	.54
No. 30.....	.48	.50	.52	.58
No. 31.....	.51	.53	.55	.61
No. 32.....	.55	.57	.59	.73
No. 33.....	.59	.61	.63	.82
No. 34.....	.64	.66	.68	.95
No. 35.....	.70	.72	.74	1.30
No. 36.....	.76	.78	.80	1.50
No. 37.....	1.00	1.02	1.04	1.70
No. 38.....	1.30	1.32	1.34	2.00
No. 39.....	2.00	2.02	2.00	3.25
No. 40.....	2.60	2.62	2.60	5.75

— ⅌ discount.
Spring Wire, 2¢ ₩ ℔ advance.

Copper Belt and Hose Rivets and Burrs.

Per ℔.		Per ℔.	
No. 5.....	49¢	No. 11.....	56¢
No. 6.....	49¢	No. 12.....	58¢
No. 7.....	49¢	No. 13.....	60¢
No. 8.....	50¢	No. 14.....	62¢
No. 9.....	52¢	No 15.....	70¢
No 10.....	54¢		

60 ⅌ @ 10 ⅌ discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to ⅜ inch inclusive	18¢ ₩ ℔
Over ⅜ to 3½ inches inclusive	17¢ ₩ ℔
Over 3½ to 5 inches inclusive.....	17¢ ₩ ℔

Piston Rods, Finished True, Smooth and Straight

¼ to ⅜ inch inclusive.....	19¢ ₩ ℔
Over ⅜ to 2 inches inclusive.....	18¢ ₩ ℔
Over 2 to 3½ inches inclusive.....	19¢ ₩ ℔
Over 3½ to 5 inches inclusive.....	2 ¢ ₩ ℔

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 ℔.

Western Spelter	5¢@5¼¢
Bertha (pure).	6 ¢

Zinc.

Duty; Sheet, 2½¢ ₩ ℔.

600 ℔ casks.....	6½¢
Per ℔	7 ¢

Lead.

Duty: Pig, $2 ₩ 100 ℔. Old Lead, 2¢ ₩ ℔. Pipe and Sheets 2½¢ ₩ ℔.

American Pig	4½¢
Bar.....	5 ¢
Pipe, subject to discount 20 ⅌.....	6½¢
Tin-Lined Pipe, subject to discount 20 ⅌	15¢
Block Tin Pipes, subject to discount 20 ⅌ ..	37½¢
Sheet, subject to discount 20 ⅌..	7¢
Old Lead in exchange, 3½¢ ₩ ℔.	

Solder.

½ @ ½ (Guaranteed)...	13¾¢
No. 1.....	11¼ 11¾¢
Extra Wiping..... 12	@12½¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson.....	₩ ℔ 15½@ 16 ¢
Hallett's.....	" .... @ 12½¢

ALUMINUM.

Prices Per Ton.

Duty: 15 cents per pound.

Over 98 ⅌ pure	₩ ℔ .75
94 ⅌ @ 98 ⅌ pure.....	₩ ℔ .65

Old Metals.

Prices Paid in New York.

Heavy Copper.....	₩ ℔ 10 ¢
Light Copper.....	₩ ℔ 9 ¢
Heavy Brass.....	₩ ℔ 7 ¢
Light Brass.....	₩ ℔ 6 ¢
Lead.....	₩ ℔ 3½¢
Tea Lead.....	₩ ℔ 2½¢
Zinc.....	₩ ℔ 2½¢
No. 1 Pewter.....	₩ ℔ 14 ¢
No 2 Pewter	₩ ℔ 7 ¢
Wrought Scrap Iron.....	₩ gross ton $17.00
Heavy Cast Scrap.....	₩ gross ton 10.00
Stove Plate Scrap,..... ...	₩ gross ton 7.00
Burnt Iron.....	₩ gross ton 5.00